PRINCIPLES FOR CHANGE IN THE POST-COLD WAR COMMAND AND CONTROL OF THE CANADIAN FORCES

by Brigadier-General (retired) G.E. (Joe) Sharpe
and Allan D. English, PhD

CANADIAN FORCES LEADERSHIP INSTITUTE

Canada

National Defence   Défense nationale

cover
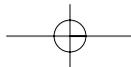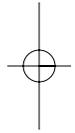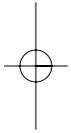
inside cover

PRINCIPLES FOR CHANGE
IN THE POST-COLD WAR COMMAND AND CONTROL
OF THE CANADIAN FORCES

by Brigadier-General (retired) G.E. (Joe) Sharpe
and Allan D. English, PhD

CANADIAN FORCES LEADERSHIP INSTITUTE

CANADIAN FORCES LEADERSHIP INSTITUTE

Principles for Change in the Post-Cold War Command and Control of the Canadian Forces

by Brigadier-General (retired) G.E. (Joe) Sharpe and Allan D. English, PhD

Published for the Canadian Forces Leadership Institute
and the Deputy Chief of the Defence Staff Group
by the Canadian Forces Training Materiel Production Centre, Winnipeg, MB.

This study was prepared for the Canadian Department of National Defence
but the views expressed in it are solely those of the authors. They do not necessarily
reflect the policy or the opinion of any agency, including the Government of Canada
and the Canadian Department of National Defence.

Canadian Forces Training Materiel Production Centre
Canadian Forces Base Winnipeg
PO Box 17000 Stn Forces
Winnipeg, MB
R3J 3Y5
Telephone: (204) 833-2500 Ext.5356
E-mail: Beaudette.KM@forces.ca

TABLE OF CONTENTS

FOREWORD

This is the first in a series of publications sponsored by the Canadian Forces Leadership Institute. The purpose of these publications is to disseminate ideas about leadership not only to members of the Department of National Defence but also to a wider audience of those who have an interest in military leadership. Readers are encouraged to contact the Institute or the authors if they have any questions or would like to pursue the issues examined in this study in more depth. The Canadian Forces Leadership Institute is happy to collaborate with the Deputy Chief of the Defence Staff Group in the publication of this study.

This report is particularly timely because of the ongoing debate in the Canadian Forces over how command and control should be exercised in the 21st century. The authors have produced one of the first carefully documented Canadian studies of this subject. The Canadian Forces Leadership Institute encourages this type of work and hopes to publish others that will contribute to the debate on this and similar topics.

Capt (N) A.C. Okros
Director
Canadian Forces Leadership Institute
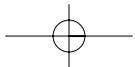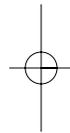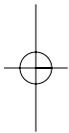
PREFACE

This study came about as a result of a Deputy Chief of the Defence Staff (DCDS) Group retreat held in Kingston, Ontario in February 2001. The focus of the retreat was Canadian Forces (CF) Command and Control (C2) as it related to the roles and functions of the DCDS Group. In a conversation with the authors the DCDS at the time, Lieutenant-General Ray Henault (now General Henault, the Chief of the Defence Staff), observed that he was sure that a number of the ideas to change C2 in the Group proposed by participants at this retreat had been put forward in the past. The authors asked him if a history of C2 in the DCDS Group had been written that outlined past C2 change initiatives and explained how C2 in the Group had evolved. When he replied "No," the authors suggested that they write such a history to document the evolution of C2 in the DCDS Group and to serve as a reference for those in the Group when contemplating new ways of exercising C2 in the Group. This offer was accepted; however, the authors were asked to pay particular attention to the post-Cold War period and to include relevant CF C2 issues. This study was submitted to the DCDS Group on 28 June 2001. It is reproduced here to achieve wider distribution and to promote debate on this important topic.

During the preparation of this study, it occurred to the authors that while many different models of C2 had been put forward, no comprehensive and clearly articulated set of principles of C2 in the CF existed to guide those charged with evaluating C2 models for the CF. Therefore, the authors broadened the scope of their work somewhat to include a discussion of how the CF could devise such principles.

Another important point noted in the research for this study was the lack of cited sources in almost all the previous C2 studies done for DND. This made it virtually impossible to properly assess the validity of these works. Therefore, the authors have cited all sources used in preparing this study so that their work can be evaluated based on the

sources used and so that follow on work can build on the foundation presented here. The authors, who may be contacted at *kmg1@sympatico.ca*, look forward to receiving comments from readers.

The authors would like to thank current and former members of the DCDS Group, particularly General Henault and Colonel Mike Boomer, for their encouragement in the writing of this study. The authors are also grateful to the Canadian Forces Leadership Institute, especially its director Capt (N) Alan Okros, for its support in publishing the study.

G.E. (Joe) Sharpe
Allan D. English

EXECUTIVE SUMMARY

PRINCIPLES FOR CHANGE IN
THE POST-COLD WAR COMMAND AND
CONTROL IN THE CANADIAN FORCES

> **Command structures do not exist of their own accord. They come into being, change, and develop to permit commanders at the appropriate level, from top to bottom, to orchestrate the application of military force at sea, in the air, and on land.[1]**
>
> – General H. Hansen, former Commander-in-Chief,
> Allied Forces Central Europe

BACKGROUND TO STUDY

This study is based on a requirement identified by the Deputy Chief of Defence Staff (DCDS) Group to document the rationale for changes to the command and control (C2) arrangements of Canadian Forces (CF) since the end of the Cold War, to evaluate the effectiveness of the changes, and to offer principles to guide future change in C2 in the CF.

AIM

The aim of this report is to provide a comprehensive, properly referenced analysis of the evolution of the post-Cold War C2 of the CF, with lessons learned and principles for planning and implementing change in C2 in the CF during its transformation to meet the vision of "Strategy 2020."

INTRODUCTION

Much of the C2 theory in the professional military literature is based on the work of Martin van Creveld. He describes C2 in terms of the factors of "organizations, procedures, and technical means" necessary

to exercise command. Van Creveld observed that there is no such thing as a "one size fits all" C2 system, because, although the functions of command are unchanging, the way in which it is carried out and the relative importance and the relationship of the factors to each other vary over time and with conditions. Also, because people play a critical role in any C2 system, changing the people in a system will inevitably change the system even if command structures, organization, and technology are kept constant.[2]

In analyzing modern C2 in the CF, this paper has taken a wide view of C2. Building on van Creveld's concepts, we have focussed on the human dimension as the key element in command. Van Creveld observed that "technology should not dictate the structure and functioning of command," because in the past "advances in command resulted not from technological superiority but from a recognition of the limitations of technology and improvements in training, doctrine and organization to overcome them."[3] To this we would add – it is human beings who must create C2 systems by recognizing the limitations of technology and by improving training, doctrine and organization to overcome these technical limitations.

SUMMARY OF LESSONS FROM HISTORY

The period 1946-64 has been called "the Command Era" by Douglas Bland. The RCN, RCAF and Canadian Army were commanded and administered by the three Service Chiefs and their efforts were co-ordinated, with varying degrees of success, by the Chairman of the Chiefs of Staff. Bland characterizes the Command Era as one where "command authority, military concepts of decision-making and administration . . . and a reliance on subjectivity based on experience" prevailed. This organization, Bland argues, was "militarily efficient" but seen as "inefficient in the eyes of accountants." Nevertheless, at that time it was generally accepted "that military leaders" and "military norms

and values" defined the organizational culture of DND. The period from 1964 to the present is described by Bland as the "Management Era." in which the military culture of the CF was replaced by a more civilian, business-oriented culture based on "concepts of functional unity" and management theories. In this new organization, the chain of command has been replaced by centralized functional entities that "operate in long parallel lines from NDHQ to practically the lowest levels of DND and the CF."[4] This organizational structure has advantages, but it has also had a detrimental impact on the chain of command. A former CDS, G.C.E. Theriault, put it this way: "an increasingly unwieldy, bureaucratic structure and culture . . . have sustained inflated staffs and, in particular, led to a serious blurring of statutory responsibility and accountability . . . and . . . thwarted the evolution of a necessary, disciplined, unified military staff system."[5]

This study has illustrated how CF C2 structures have evolved constantly, changing with the environment that surrounded them. Biology provides the best metaphor for understanding the dynamics of C2 systems as they grow, are pruned back, have branches grafted on to them, flourish or wither according to circumstances. Attempts to characterize C2 systems as some sort of mechanical device or rigid, relatively stable structure fail to capture the fluid and chaotic nature of these human-based structures. The only thing that can be said with certainty about any newly minted C2 system is that it will shortly be evolving into something else.

AN EVALUATION OF THE EFFECTIVENESS OF COMMAND AND CONTROL IN THE POST-COLD WAR CF

The principal changes in post-Cold War C2 in the CF were based on the Management, Command and Control Re-engineering Team (MCCRT) initiative which was the latest in a series of organizational changes

over the past 35 or so years based on management theory. These changes have been difficult to assess by both those inside and outside DND because the CF lack a set of principles to evaluate change in its C2 based on a comprehensive and widely accepted theory of command and control.

Nevertheless, those who have assessed the effectiveness of the MCCRT found that its effects on C2 in the CF were mixed. Some improvements were made to a system that in the early 1990s has been described as being in its worst state in recent history. However, the MCCRT initiative and other changes based on management theory have been criticized by a number of studies.

Perhaps the biggest criticism of the management-based reforms of the past four decades is that their underlying measure of effectiveness – efficiency – is essentially incompatible with military, and most other public service, organizations. Even in the private sector some of these processes, particularly re-engineering, have not met the expectations of their proponents. And leading management theorists have now realized, as the Glassco Commission did 40 years ago, that attempting to apply "the business style of management" to government organizations is counterproductive because it "creates the wrong priorities." That is not to say that certain management tools, like business planning, cannot be used in the military, but that they are not useful as guiding principles for change. Another fundamental flaw in many of these management theories is that they are based on the assumption that most decisions are made rationally. However, issues like resource allocation and "rice bowls" cannot always be resolved in an entirely rational manner. The defence decision making process is a complex process with elements of rationality interspersed with competition for scarce resources and negotiations that result in solutions, that while not always based on logic, can be accepted by the major stakeholders.

Another critical impact of the imposition of management theories and procedures, such as business planning, on virtually every aspect of the CF has been their detrimental effect on morale. This is not to suggest that management tools and practices have no place in the CF – they do. But when management tools and practices dominate the organization they have a corrosive effect on the profession of arms. Having the capability to engage in combat is not a business activity, and in many ways it requires measures of effectiveness fundamentally different from "efficiency" as defined by the marketplace.

Some of the problems raised in post-Cold War CF C2 studies are related to issues debated in the warfare theory literature today, namely, the meaning of the term operational, how each service thinks about and applies doctrine, and how jointness is interpreted by various services. Canadian military professionals involved in the design of C2 systems should understand that current definitions of "operational" vary across services and nations. The definition used in official Canadian doctrine is based on a US Army concept that is not always appropriate for Canadian circumstances given the small size of the CF compared to their American counterparts, not to mention fundamentally different interpretations of these issues by the USN and USAF. This study has also documented that each service, particularly the American services, with whom the CF are mandated to have "seamless operational integration at short notice,"[6] views joint operations from a different perspective and uses doctrine in different ways. It is clear that the CF need to come to a consensus on these issues in a way that, while permitting inter-operability with our allies, will also allow for the reality that in a Canadian context they will be seen differently from the way our allies see them.

Even though the importance of organizational culture is recognized in a number of DND documents and in the management literature, it has been largely overlooked in most of the change initiatives in the CF

since 1964. Yet we know that the key factor in creating effective C2 arrangements is an organizational culture that promotes and rewards the values that are necessary for a C2 system to work. Today, most C2 systems in the Western world depend on subordinates to take the initiative and to have trust in their superiors. Unfortunately, it has been clearly documented in the CF and other Western armed forces that there is a lack of trust between leaders and the led because many of those in the ranks below colonel have lost confidence in their superiors. The key factor here appears to be an imbalance between the authority given to field commanders and the accountability expected of them. Over 25 years ago it was recognized that the new NDHQ structure had centralized authority but left accountability relatively decentralized. This imbalance between authority and accountability appears to be at the heart of the lack of trust in senior leaders and higher headquarters today.

A crucial step in rectifying this problem will be modifying the organizational culture of the CF, and this will be a long a long and difficult process. Cultural change is an ongoing process that will need to be institutionalized in the CF if their culture is to be kept congruent with that desired by its leaders. In order to make organizational change a permanent feature of the CF, it will need to be accepted as necessary, but perhaps more importantly people in the CF will need the competencies to deal with the change brought about by the ambiguity and uncertainty of the post-Cold War world. But developing these competencies will not be a matter of holding a few retreats or giving people two- or three-day courses. The skills and experience required to modify organizational culture in a complex organization like the CF will require professional development based on education, training, and experience throughout the careers of members of the CF. This will be a critical step to establishing a learning culture in the organization. While many have observed on the need for a "learning culture" in the CF, some of the essentials to creating it have not been fully developed in DND.

For example, colonel and general officer (DP 4) professional military education is lagging far behind the requirement to provide formal individual training and education for these officers, a decline in the number of colonels and general officers has eroded the "experience" pillar in the officer professional development system, and the imposition of management-based values on DND has sown confusion about the role of the profession of arms in the values and ethos of the CF. But before these serious problems can be addressed in an effective manner, clearly articulated and widely accepted principles for effecting C2 in the CF are required.

NEW WAYS OF THINKING ABOUT C2 IN THE CF

The first step in establishing a set of valid principles to guide change in C2 in the CF will be for the Canadian military to adopt a theory of command and control that is based on empirical evidence and that is culturally compatible with the CF. Two Canadian researchers, Ross Pigeau and Carol McCann at DCIEM, are working on a comprehensive evidence-based theory that could provide a solid foundation for command in the CF and which would be compatible with the organizational culture of the CF. The Pigeau-McCann model asserts the following key points: command is the *creative expression of human will to accomplish the mission*; command capability is defined by a combination of competency, authority and responsibility; effective command demands a balance between competency, authority and responsibility; control is *those structures and processes devised by command to enable it and to manage risk*; control is a tool of command therefore it should support command competency, authority and responsibility; C2 is the *establishment of common intent to achieve coordinated action*; common intent is made up of shared explicit intent and operationally relevant shared implicit intent. This is a very promising theory upon which to base principles for the exercise of command and for developing effective C2 structures in the CF.

Until the CF adopt a comprehensive set of principles to guide the
development of its C2 systems, any changes to C2 structures should
maintain their flexibility. While centralization may appear more
efficient to some, it would deprive the CF of the single-service
competencies that may be required at a moment's notice and the
flexibility to deal with more than one crisis at a time that the current,
rather untidy, system provides. This is not to suggest that the current
system cannot be improved upon, but any future systems should preserve
the flexibility vital to any successful military C2 model.

PRINCIPLES FOR CHANGE IN THE COMMAND AND CONTROL OF THE CF

The following principles for guiding change in the post-Cold War
C2 of the CF were articulated in the paper.

Culture. The organizational culture of the Canadian Forces is unique
amongst the militaries that we work with, and indeed amongst other
government departments and Canadian businesses. Most failures in C2
organizational changes can be traced to failures to modify the culture
to accept the changes or by acquiring technology that is not compatible
with the organization's way of doing things. An effective C2 system
for the CF must recognize this uniqueness and respond to it, rather
than assuming that the culture will change to accept concepts adapted
from other militaries or organizations.

People First. The well known, but often neglected, principle of people
first must underpin any successful modification to C2 structure or
technology. Tapping into the creative potential of the military cadre
involved in command related activities will not only significantly
enhance the CF's ability to affect outcomes but also will increase
morale among its members.

Command capability can be defined as a combination of competency,
authority and responsibility. In order to make significant progress in

developing an effective and efficient C2 system, the CF need to adopt a standard way of looking at C2 – preferably one that reflects the realities of the modern technological environment and the skill sets of the people who make up the command cadre. The model being developed by Carol McCann and Ross Pigeau and used at the DCDS retreat in February 2001 reflects a modern Canadian concept that accommodates both technology and people.

Effective Command demands a balance between Competency, Authority and Responsibility. While this principle is not new, many of the systemic problems plaguing the CF chain of command today are associated with an imbalance between these factors. Many commanding officers express dissatisfaction with their range of authority, and many serving members of the military do not believe their supervisors possess sufficient authority to affect their well being. Command competencies must be developed and nurtured carefully through a combination of training, education, and experience throughout an officer's career.

Control is a tool of Command and is used here to describe the various mechanisms needed to connect levels of command. Control should support command competency, authority and responsibility. Implicit in this principle is the requirement to understand the limitations of technical systems and to find non-technical solutions to overcome them.

Flexibility. C2 structures should be designed so that they can evolve quickly to meet changing needs. Structures and processes that foreclose on future options should be avoided. To be adaptable to changing circumstances C2 structures should be developed as learning mechanisms that process experiences and use them to improve the system. The unpredictability of future operations requires that any CF C2 system be able to change its control philosophy rapidly to accommodate whatever situations may arise.

Create a "learning organization." At both the personal and organizational level, continual learning and change should be encouraged and rewarded. The higher the level of command, the more commanders and their staffs should concern themselves with maximizing their influence by ensuring a healthy organizational climate and by enabling their subordinates. People who populate the CF C2 system should be able and willing to be creative, flexible and to demonstrate initiative. And these behaviors should be rewarded. Risk adverse and/or micro-managing behavior should be discouraged. Professional military education in the CF should be structured to support these objectives.

RECOMMENDATIONS

It is recommended that:

a.   The Pigeau-McCann model of command and control be adopted as the theoretical base for C2 in the CF.

Rationale: This model is one of the leading empirically-based models of C2 currently being developed. As a model being developed by Canadian researchers and using Canadian (as well as other) data, it is compatible with the organizational culture of the CF, and it deals with the major challenges confronting Canadian decision makers.

b.   The principles for developing C2 systems articulated in this report be evaluated using the Pigeau-McCann model of command and control and evidence from other disciplines such as military history, and be adopted once their validity is confirmed.

Rationale: This will be the first clear statement of evidence-based C2 principles in the CF; however, further research is required to ensure that the principles are valid.

c.   Until valid principles for developing C2 principles have been
        adopted, any changes in CF C2 arrangements should leave the
        greatest possible flexibility for adaptation and change in the
        future.

        Rationale: Before the principles can be validated, changes in
        CF C2 arrangements will be required; however, these changes
        should not foreclose any future options.

d.   The ethos and organizational culture of the CF be re-focused
        on the profession of arms.

        Rationale: The CF's use of management-oriented processes
        and tools over the past 35 years, some of which have proven
        ineffective even in the business profession, has sown confusion
        about the role of the profession of arms in the values and
        ethos of the CF and has made it very difficult to create an
        organizational culture in the CF based on military values.

EXECUTIVE SUMMARY NOTES

1. H. Hansen "Foreword" in Thomas-Durell Young, ed. *Command in NATO After the Cold War: Alliance, National, and Multinational Considerations* (Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, 1997), ix.

2. Martin van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1985), 9, 262-3.

3. Van Creveld, 262, 274-5.

4. Douglas Bland, *The Administration of Defence Policy in Canada 1947-1985* (Ottawa: Ronald P. Frye, 1987), 15-17, 22.

5. G.C.E. Theriault, "Reflections on Canadian Defence Policy and its Underlying Structural Problems," *Canadian Defence Quarterly* 22, no. 6 (July 1993), 9.

6. "Shaping the Future of the Canadian Forces: A Strategy for 2020," (June 1999), *http://www.vcds.dnd.ca/cds/strategy2k/2020_e.doc*, 10.

PRINCIPLES
FOR CHANGE
IN THE
POST-COLD WAR
COMMAND AND
CONTROL
OF THE
CANADIAN
FORCES

**Command structures do not exist of their own accord. They come into being,
change, and develop to permit commanders at the appropriate level,
from top to bottom, to orchestrate the application of military force
at sea, in the air, and on land.**[1]

– General H. Hansen,
former Commander-in-Chief, Allied Forces Central Europe
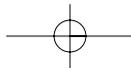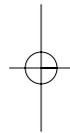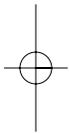
PART 1   INTRODUCTORY MATERIAL

BACKGROUND TO STUDY

Since the end of the Cold War the Canadian Forces (CF) have changed their command and control (C2) arrangements in a number of ways. This study is based on a requirement identified by the Deputy Chief of Defence Staff (DCDS) Group to document the rationale for these changes, to evaluate the effectiveness of the changes, and to offer principles to guide future change in C2 in the CF. For the purposes of this study it has been assumed that the conduct of operations, or force employment, is the fundamental raison d'etre of the CF. Nevertheless, the relationship among the functions of force development, force generation, and force employment is a critical consideration in the development of C2 processes and structures.

AIM

The aim of this report is to provide a comprehensive, properly referenced analysis of the evolution of the post-Cold War C2 of the CF, with lessons learned and principles for planning and implementing change in C2 in the CF during its transformation to meet the vision of "Strategy 2020."

METHODOLOGY

The authors of this report have used a multi-disciplinary approach to conduct this study. The report is based on unclassified official Department of National Defence (DND) documents, reports prepared for DND, published works in the open literature, interviews, discussions with officers who played key roles in a number of the re-organization activities in the 1990s, and, to a limited extent, personal experiences. The sources for this report, including transcripts of the interviews, are cited in it and can be consulted as required.

Since a key goal of this study is to provide fundamental principles to guide future change in C2 in the CF, this study will not examine or evaluate specific CF C2 structures except as means of deriving lessons learned and principles for guiding future change.

INTRODUCTION

Command and control techniques have varied among nations and over the ages. Each C2 method is unique and is based on the national culture of the country and organizational culture of the service or services involved. This variety in outward appearance of ways of effecting C2 has resulted in a large and diverse literature on the subject with little consensus about what constitutes the essence of C2.[2] Yet, post-Cold War attempts to restructure CF C2 have indicated that they intended to "respect the principles of organization and of command,"[3] even though no comprehensive and generally accepted statement of command principles has been articulated by the CF, let alone an accepted CF theory of command and control based on empirical evidence. Canada is no worse off than the rest of the armed forces of the Western world in this respect, however, as most current definitions of C2 tend to be "verbose, descriptive and lacking in conceptual guidance."[4] This lack of C2 conceptual clarity created significant challenges for the CF in the early 1990s, as Canadian military involvement in the Gulf region was initiated at the same time as a major domestic operation was underway at Oka. Indeed, according to the officer who served as the Director General of Military Plans and Operations (DGMPO) at the time, at the beginning of the Gulf War, Canada had no organization in place to command and control operations, and no operational context within which to conduct operations outside of NATO.[5] While this situation was understandable, given Canada's reliance on NATO C2 concepts for nearly 40 years, it heralded a decade of uncertainty and change with respect to C2 for the CF.

Much of the recent C2 theory in the professional military literature is based on the work of Martin van Creveld. He describes C2 in terms of the factors of "organizations, procedures, and technical means" necessary to exercise command. Van Creveld observed that there is no such thing as a "one size fits all" C2 system, because, although the functions of command are unchanging, the way in which it is carried out and the relative importance and the relationship of the factors to each other vary over time and with conditions. Also, because people play a critical role in any C2 system, changing the people in a system will inevitably change the system even if command structures, organization, and technology are kept constant.[6]

In analyzing modern C2 in the CF, this paper has taken a wide view of C2. Building on van Creveld's concepts, we have focussed on the human dimension as the key element in command. Van Creveld observed that "technology should not dictate the structure and functioning of command," in fact "advances in command resulted not from technological superiority but from a recognition of the limitations of technology and improvements in training, doctrine and organization to overcome them."[7] To this we would add – it is human beings who must create C2 systems by recognizing the limitations of technology and by improving training, doctrine and organization to overcome these technical limitations.

The analysis in this paper is divided into three parts. The second part of the paper examines the evolution of CF C2 arrangements in the recent past focussing on the post-Cold War period. The third part of the paper provides an evaluation of the effectiveness of the changes made to C2 in the CF described in part two. The fourth part provides new ways of thinking about C2 in the CF in the 21st century and discusses the major issues surrounding the development of ways of bringing about change in the C2 arrangements of the CF. The paper concludes with recommendations for the CF to adopt a distinctively

Canadian model of command and control that can be used to validate principles to guide future change in CF C2.

One of the fundamental problems in discussing the topic of C2, particularly with a military audience, is that the term command and control means different things to different people. For some, the term connotes C2 technology, others think of describing the chain of command based on organizational diagrams, still others see C2 as largely a human-centred activity. In the second and third parts of this paper, command and control are used in their historical context. This can sometimes be confusing, because at different times in our history the term was used in various ways. Generally though, C2 in its historical context refers to the structures (real and imagined), processes, technology, and people that comprise the system. In the fourth part of the paper a new model, and definitions, of C2 are proposed to guide the evolution of C2 in the CF for the future.

Command and control in the Canadian military, like the armed forces of other Western nations, have evolved continually over the past 50 years. But in the CF they are inextricably linked to Canadian defence structures and processes, and these structures and processes have changed over time to produce a distinctly Canadian way of approaching defence issues.[8] Therefore, we begin with an overview of how Canadian defence policy has influenced the command and control of the CF in the modern era.

PART 2   THE EVOLUTION OF COMMAND AND CONTROL IN THE CF

The evolution of the Canadian defence establishment over the past 50 years gives clear insights into the nature of C2 in the CF as certain themes pervade this era that are still relevant today. During the Second World War more than one million men and women served in the Canadian forces and over 30,000 civilians were employed by the defence department.[9] A huge administrative and C2 system evolved, which included three Ministers of the Crown at the top: a Minister of National Defence (MND) to co-ordinate all the department's activities and with special responsibility for the army, and a MND for Air and a MND for the Navy to look after the details of running those services. The post-war world, it was assumed, would be a peaceful place with no need for large armed forces and this sentiment ushered in a massive reduction of the Canadian military after the war to a planned figure of just over 50,000.[10]

POST-SECOND WORLD WAR REFORMS

The first post-war MND, Brooke Claxton, faced many of the same problems in 1947 that his counterpart David Collenette did when he was involved in producing the 1994 Defence White Paper – "what to do in the absence of obvious military threats, how to get the most from the defence budget, and how to ensure that the defence establishment responds appropriately to the direction of government." Both ministers also faced common challenges in that they had to deal with circum-stances as they found them not as they would have liked them to be (to paraphrase Lord Kitchener). "Senior leaders, capabilities, commit-ments, organizations, and processes" were all in place and had to be dealt with in the short-term while at the same time attempting to plan for the long-term.[11]

Claxton's challenges included taking the three service-oriented depart-ments and reducing not only their size but also their "institutional and bureaucratic interests and procedures." He was "a strong advocate of

6

unification" because he saw that Canadian defence policy had to be
approached as a single problem and not be governed by three single-
service approaches to defence. Claxton achieved a great deal in his
term as MND: he re-established the DND as a single organizaton, he
restored a central defence civil service, and in 1951 he appointed a
chairman of the Chiefs of Staff Committee to try to find some consen-
sus among the single-service Chiefs of Staff on the issues that the
department faced. Perhaps his most significant unifying action was to
have the National Defence Act re-written as the basis for "common
laws and regulations governing the armed forces and the code of serv-
ice discipline" replacing the separate acts governing the three services.
Many of Claxton's reforms were the foundation upon which his succes-
sors built and which still remain in place underpinning DND today.[12]

THE EFFECTS OF INTEGRATION
AND UNIFICATION

The next major changes in the structure of DND, although not the
resource allocation, occurred in the 1960s culminating in the integra-
tion and unification of Canada's armed forces under MND Paul
Hellyer. A number of factors influenced these changes. The most dra-
matic one was the Cuban Missile Crisis of 1962. Canadian forces
focussed on their alliance commitments and were "largely responsive
to allied commanders." When Prime Minister (PM) "John Diefenbaker
tried to exercise control over the armed forces, he found that the cen-
tral administration in Ottawa had no national plans, no intelligence
capabilities, and no reliable structure for commanding and controlling
the forces." One year later, the next PM, Lester Pearson, decided to
rectify this situation and appointed "the tough-minded and ambitious"
Paul Hellyer as MND. His reforms to DND have been well document-
ed, but a number of key factors are often overlooked in the passionate
debates over whether unification of the forces was required. First of
all, Hellyer, while not rejecting the alliance basis of Canadian policy,

believed that it needed to be formulated from a more distinctly Canadian perspective. Up to this point Canadian defence policy had been based on "a series of 'contributions'" to alliances and to the UN "that prompted the development of a disjointed defence establishment centred on three services each with a small operational component." This led to specialization and fragmentation among the three services and Canadian defence policy lacked a central focus. Hellyer's unification policy continues to be controversial; however, Bland argues that the effects of unification have been exaggerated because "except for a brief period between 1967 and 1972, unification as envisioned by Paul Hellyer has not been the organizing concept of the Canadian Forces." Bland contends that over the last 30 years there has been no central concept to guide planners, but rather continuous competition between the "ideas of unification, integration, public service management, and tri-service traditions."[13]

Throughout the 1970s and 1980s Canadian defence leaders viewed Europe as the CF's primary theatre of operations, with minimal planning or resource allocation for domestic or even defence of North America operations. The three Canadian services were split among NATO land, air, and naval forces and they trained and were planned to be employed independently of each other. Strategic direction came from the Supreme Allied Commander Europe, an American, and National Defence Headquarters (NDHQ) worked in an administrative and force generation capacity for the Commander Canadian Forces Europe. There was no real strategic CF headquarters at this time and most operations outside of Europe were conducted in an ad hoc manner.[14]

A major post-unification influence on Canadian defence was the 1971 White Paper, Defence in the 70s, presented to Parliament by MND Donald Macdonald. One of its most significant effects, from the point of view of the C2 of the CF, was to lessen the Minister's perceived dependence on military advice and to provide a new rationale for

"determining 'defence requirements,'" because some in government found military assessments of DND's requirements to meet government policies unacceptable. A Management Review Group (MRG) was subsequently established to inquire into methods to reorganize decision-making in the CF. According to some, the implementation of the MRG's recommendations has blurred accountability and responsibility for defence decision making "beyond recognition". Bland asserts that these reforms "stripped senior officers of one of their primary social and professional functions, to provide expert advice to governments on the means necessary to meet governments' defence objectives". Another theme from the MRG study that resonates today is the finding of its Personnel Task Group that many military personnel resented an "erosion of military values" that they attributed to "Ottawa's tendency to 'pre-empt' the role of local leaders" by centralizing personnel functions in the national headquarters.[15]

Opponents of unification and what was seen by some as the "civilianization" of DND were encouraged when Allan McKinnon (Progressive Conservative MND 1979-80) established the 1979 Task Force on Unification (which produced the Fyffe Report) to examine the effects of unification on the CF. The Report concluded, among other things, that the heads of the army, navy, and air force needed to be in Ottawa and to be members of decision making bodies like the Defence Management Committee (DMC) to exert the influence on the department that their positions warranted. The Fyffe Report also found that the CF had serious deficiencies in its "operational effectiveness" which would be at least partly rectified by increasing the influence of the three environmental chiefs. These findings were strongly opposed by the Chief of the Defence Staff (CDS) and the Deputy Minister of National Defence (DM) at the time who stood to have their own power bases eroded if the three environmental chiefs increased their influence. With the return to power of the Liberals in 1980, and a new MND, Gilles Lamontagne, another Task Force was commissioned,

in May of that year, to review the Fyffe Report. The Vance Review
was its outcome and it rejected reversing the integration that had
taken place in the CF, but agreed that the service chiefs should have
membership in certain decision making committees, like DMC, starting
in 1980.[16]

Whatever shortcomings might have existed by the mid-1980s, the 1986
White Paper *Challenge and Commitment: A Defence Policy for Canada*
claimed that Canada had created "a defence structure that is distinctly
Canadian, has served us well and is essentially sound." Noting that the
office of CDS had been created in 1964 to provide "a single source
military advice to the Government" and that the CDS was "the leader
of the military profession in Canada," the White Paper declared that he
was "ultimately responsible for the operational command and control
and logistic support of all Canadian Forces." This statement was made
despite the fact that the National Defence Act only empowers the CDS
with "the control and administration" of the CF.[17] The White Paper
went on to say that the CDS received "essential support from his senior
advisers" and a "recently strengthened Armed Forces Council."
However the White Paper asserted that "in a crisis our present struc-
ture would not suffice and would have to be reorganized at precisely
the moment when continuity would be essential." It went on to say that
a further reorganization of the CF C2 system would be undertaken
"from existing resources."[18]

Some of the issues raised in the 1986 White Paper were the subject
of the Little-Hunter Study, commissioned in 1988, to determine how
NDHQ could be best organized to deal with emergency and war situa-
tions. Despite strict limits on the changes it could recommend, the
study team suggested that operational command of forces be separated
from NDHQ. However, the CDS and DM, stating that events had over-
taken the study, shelved it and "NDHQ remained a dysfunctional
organization with ad hoc arrangements for command and control of

operations" and no clear method of transitioning from routine operations to emergency or war operations. Based on this assessment, it has been argued that by the early 1990s the CF were in their worst state in recent history.[19] Support for this contention can be found in the almost total lack of understanding amongst senior air, land and maritime officers about how the CF contingent that was deployed to the Gulf in 1990 should be commanded and controlled. For example, when the command and control organization for this contingent was being designed, it was necessary to issue a document under the CDS's signature describing the responsibilities and authorities of supporting commanders to senior Canadian officers, to clarify erroneous assumptions.[20] In addition, the 1994 Auditor General's Report found that the same problems that existed at the time of the 1972 MRG were still prevalent and that "the collapse of fundamental military procedures and responsibilities" had led to the inability of the CF to maintain operational standards.[21]

THE CHALLENGES OF THE POST-COLD WAR WORLD

Those writing the 1994 White Paper faced many of the same challenges those who formulated defence policy at the end of the Second World War had faced. To address the uncertainties of the post-Cold War world, the 1994 White Paper, knowingly or unknowingly, imitated Claxton's approach almost 50 years earlier by not listing defence priorities or objectives. Much stock was placed in "multi-purpose, combat-capable forces" and in a shift of focus towards the UN and away from the "expensive, open-ended commitments that characterized Canadian defence policy between 1950 and 1992." Once again DND was to be reorganized as headquarters and bases were closed, the command structure re-arranged and major procurement policies changed. But as in the past, bureaucratic resistance to change, ingrained ways of doing things in DND and the post-Cold War search for a "peace dividend"

had the planners looking for areas where they could show returns quickly, rather than those that could produce longer term savings while maintaining capability. Throughout the decade it remained unclear to the planners whether a higher level strategic plan or simply resource pressures were driving force reductions and organizational changes.[22] This led to what Bland characterized in 1997 as a situation where there was "no consensus between ministers, officials, and officers about the situation, objectives, and the resources needed for national defence." The result was "confusion" - the "chief characteristic of Canadian defence policy today," according to Bland.[23]

Even so, this perception of confusion in Canadian defence policy should not be surprising. Those seeking some rational process to guide something as complex as defence policy search in vain. By its very nature and the number of competing interests and stakeholders, the defence policy process is not simple. Yet, Bland argues that despite changes in context, circumstances and rhetoric, "the actual policy that has directed Canadian defence policy is very nearly always the same." He offers two possible explanations for this hypothesis: 1) there is a natural defence policy for Canada and 2) "the establishment" always drives policy back to the status quo whenever there is a deviation from it.[24]

Another reason for complexity and confusion in the nature of Canadian defence policy lies in the inherent tension between politicians, bureaucrats, and military professionals combined with the changing nature of the post-Second World War world. This situation was exacerbated by the fundamental changes in the administration and C2 of the CF as command concepts popular following the Second World War and the Korean conflict were gradually replaced by more management-oriented systems of direction.[25] All Western defence establishments grew dramatically during the Cold War, not only because the large standing forces of that era required larger administrative and C2 structures,

but also because of an increased reliance on high technology. This meant that the defence bureaucracy became more directly involved with procurement and dealing with industry than it had been previously, a relationship that is still explicitly stated in current defence policy.[26] Closer relations with civilian industry were fostered and the traditional military culture based on regimented and hierarchical decision-making which focussed maximum authority and responsibility in individuals was overshadowed by a business culture that slowly crept into DND. The number of officers occupying primarily administrative roles in Western HQs increased dramatically, and the number of officers who saw business, rather than the profession of arms, as their focus increased as well.[27] According to Detomasi, "the overall effect was to blur the distinctions between civilian and military organizational roles and functions dramatically."[28]

By 1993 the government was looking to make huge spending cuts to bring the deficit under control and many in the public and in government circles expected that a post-Cold War "peace dividend" would be forthcoming. This was based on the assumption that a more peaceful "new world order" had arrived, and that large savings could be made by drastically cutting defence budgets. In Canada, the perception existed within Treasury Board and some segments of Canadian society that significant savings could be made by eliminating waste caused by bureaucratization and administrative overlap in DND. And Treasury Board felt that these savings could only be realized if the resources were removed from DND first, making the status quo unsustainable. As a result, a major defence restructuring based on the Management, Command and Control Re-engineering Team (MCCRT) project was announced in 1994. Those involved in the project, Detomasi tells us, believed that prevailing private sector management processes would be effective in restructuring DND. Therefore, current DND guidelines and policy flow predominantly from popular management concepts like re-engineering and total quality management. These theories, Detomasi

explains, assert that "fewer people can provide even greater levels of service by fundamentally re-designing the work they do." The underlying assumption of these theories is that management techniques such as improved information systems, a heavier reliance on teamwork or the devolution of authority will allow better use defence resources by focussing on DND's "core business" – the maintenance of combat-ready sea, air and land forces.[29] Yet re-engineering has not met the expectations of its promoters in the private sector as it has been shown to have only a 25-30% success rate in business change management.[30] Part of this lack of success in business can be attributed to what DeQuetteville, a former MCCRT leader and now an executive with Boeing Canada, described as the propensity of various "tribes" (or sub-cultures in the organization) both in industry and the military to protect their own interests ("rice bowls") at the expense of overarching visions of change. DeQuetteville notes that in some ways the tribes found in civilian companies "are worse than the army, navy, and air force" in resisting change.[31]

The DND publication *Defence 2000: Framework for Renewal* illustrates how management concepts were to be used by DND in its redesign efforts led by the MCCRT. It stated that "'CF operational capability is our core product and service . . . and it is the measure by which the tax-payer and the government gauge our value.'"[32] According to Detomasi, the policy guidelines outlined in *Defence 2000* called for "massive struc-tural changes in the command and control" of the CF. The number of operational HQs was to be reduced from 18 to 12, and the overall com-mand of sea, air, and land forces was to be consolidated under "Environmental Chiefs of Staff" all located in Ottawa. The target for reductions in HQ personnel was set at 50% of 1994 levels, representing "a reduction of one third in the resources devoted to national command and control, with one full layer of headquarters command and administra-tion eliminated."[33] The MCCRT, which oversaw much of this downsizing and change, therefore had significant effects on post-Cold War C2 in the CF.

T H E   M C C R T [34]

The Management, Command and Control Re-engineering Team traced its origins to a number of initiatives in the early 1990s "designed to improve the way in which DND and the CF managed its business," such as the Base DelegAAT trial, Quality of Working Life (QWL), socio-technical systems (STS) projects, Total Quality Management (TQM) and Continuous Improvement (CI). Senior DND leadership felt that these initiatives needed to be co-ordinated and a D2000 Committee, co-chaired by the VCDS and ADM (Fin), and a D2000 Secretariat, established in 1992 to foster, guide and coordinate what was referred to as "management renewal," were established to fulfill this role. In the spring of 1993, the Defence Management Committee (DMC) produced a clarification of the DND/CF mission, vision and management principles, to give D2000 a foundation for management renewal. In 1994 the Chief Management Renewal Services (CMRS) organization, based on the former D2000 Secretariat, was created to assume responsibility for management renewal. The D2000 Corporate Action Plan, containing many of the issues that would ultimately form the basis of the work of the MCCRT, including an examination of many key processes and the role and structure of NDHQ, was released on 2 Sep 94. Within a few months, it had become clear that "the work of the D2000 Committee and its many working groups needed greater coordination, emphasis and support . . . " Therefore, MCCRT, "a temporary team of senior officers and civilian personnel that would develop the implementation plan for the re-engineering of the DND/CF command, control and resource management structure" was created. Initially, MCCRT worked in parallel with CMRS; however, in the summer of 1995, the two organizations were merged under the MCCR Team Leader, MGen A.M. DeQuetteville.

The team accepted that the 1994 Defence White Paper "contained guidance that was fundamental to the work of MCCRT," and under-

stood that its job was to implement the White Paper direction as faithfully as possible.[35] Therefore, the following objectives related to "management, command and control" were adopted by it from the White Paper:

    a.   National Defence Headquarters and subordinate headquarters would be cut back so that by 1999 the personnel and resources committed to headquarters functions would be reduced by at least one third;

    b.   resource management would continue to improve through initiatives such as Defence 2000; and

    c.   NDHQ would remain a civilian-military integrated HQ.

The MCCRT also accepted the following assumptions directly related to command and control from the 1994 Defence White Paper:

    a.   the current command and control structure consumed too large a proportion of defence resources;

    b.   a new command and control structure would be in place by mid-1997;

    c.   the new structure would emphasize an improved "tooth-to-tail" ratio; and

    d.   one layer of headquarters would be eliminated.

DND senior management, following a meeting (Merrickville V) in Dec 94, offered additional guidance to that provided in the 1994 White Paper. The guidance was enunciated in the following assumptions and principles:

    a.   Assumptions:
        (1) Chiefs of Environment would move to Ottawa and Command Headquarters would be eliminated.

(2) MCCR would be an end-to-end exercise excluding operations (NDHQ down to bases).

(3) Operational models would result in a 50% reduction in resources devoted to headquarters functions (as opposed to the 33% target assigned in the White Paper).

(4) There would be a 25% overall reduction in the military executive category (generals and colonels).

(5) There would be an overall reduction in the civilian executive category (percent to be confirmed).

b. Principles:

(1) The command and control structure must deliver operationally effective sea, land and air forces capable of conducting joint operations.

(2) The supporting resource management framework must reflect D2000 principles and maximize resource efficiency.

(3) DND/CF must be organized to provide sound defence advice to Government and to deal effectively with other government departments, at all levels.

(4) Environmental Heads would provide service-specific advice and direction to include – doctrine, training standards, readiness, evaluation, force generation and environmental resource oversight.

(5) Environmental heads would not be more than one rank less than the CDS and not subordinate to the staff.

However, irrespective of what the MCCRT's analysis might have revealed, the Feb 1995 federal budget identified the layer of headquarters to be eliminated when it specified that Maritime Command Headquarters

in Halifax, Land Force Command Headquarters in Montreal and Air Command Headquarters in Winnipeg would be closed. To keep this direction in perspective, it should be recalled that the identification of which of HQs were to be eliminated was an input to the budget (much like base closures) from DND; therefore, it reflected departmental desires in some way.

The MCCRT mandate continued to evolve as the result of decisions by senior leaders in the CF, and its initial terms of reference were specified in NDHQ Instruction VCDS 2/95 dated 13 Jan 1995. The mission of the Core Team of MCCRT was "to develop structural options and the implementation plan for the DND/CF command, control and resource management structure, utilizing the concept of re-engineering to arrive at logical and innovative resource savings in both Headquarters and support functions." The Core Team reported to the VCDS and initially consisted of ten senior officers/civilian executives and support staff under of MGen DeQuetteville. Originally, the Core Team was given a one year mandate, but as the extent and scope of work grew considerably, its mandate was extended until Jun 1997. MGen G.E.C. Macdonald assumed leadership of the Core Team in Jul 1995.

Core Team members were named between mid-Dec 1994 and very early Jan 1995. Their initial training consisted of re-engineering concepts training, team building and limited training in Microsoft Powerpoint as this tool was settled upon as the main MCCRT presentation format. The re-engineering concepts training was provided by two management consulting groups who also provided team building assistance and ongoing facilitation. The re-engineering approach adopted was based conceptually upon the work of Michael Hammer and James Champy and was consistent with the approach recommended to DMC by one of the consultants at a late Nov 1994 meeting.

In order "to ensure that all of the many change activities either underway or needed at the national level" were co-ordinated properly, it was

decided that, while the Core Team would continue to work for the VCDS, that DMC would be the overall MCCR Steering Committee. The Core Team chose "the re-engineering concepts espoused by Randolph and Sooley" as its philosophical base "and developed a generic re-engineering training package which was provided to all national level change teams at a session in Cornwall in Feb 95."

In his foreword to the MCCRT Historical Report, MGen MacDonald described the MCCRT initiative as a unique undertaking for the CF because of the "dramatic goals established, the radical changes imple-mented, and the extensive commitment by DMC members." He admitted that the team "had little expertise in the new approach to work processes," but that by adopting the "recognized principles of re-engi-neering, we worked our way through the steps during the period from Dec 94 to Nov 96." He noted that "many members of MCCR Teams have argued for the continuance of the MCCRT beyond Jul 97" stand-down date for the team, but he acknowledged the reality that "centrally-driven coordination has its limitations. For the initiative to be truly effective, and for individuals to truly assume ownership, it is necessary that they implement the new processes, solve the related problems, and be prepared to make the results work. At best, a central team can assist in common areas, on policy issues, with monitoring and meas-urement, etc." It was therefore decided that "some of these common responsibilities" would continue in an MCCRT-like section of the future Management Renewal Services (DGMRS) organization." MGen MacDonald concluded his remarks with the observation that: "We all need to ensure that the fundamental goal of the MCCR initiative to re-engineer and reduce unnecessary command and control and support functions for the benefit of operational capability is achieved. Moreover, we need to recognize that the changes we have introduced are for the long term and position us to excel through continuous improvement."[36]

In his overview of the MCCRT History, Acting Vice Chief of the Defence Staff, MGen L. Campbell, writing in June 1997, described the MCCRT initiative as "an unparalleled project in the history of DND and the CF. Not since unification has the organization undergone such dramatic change." MGen Campbell admitted that it was "the reality of post-cold war budget cuts" that made it "necessary to radically reduce infrastructure and personnel." Therefore, the "main focus of the MCCRT became the headquarters structure with the intention of making dramatic cuts to preserve the allocation of resources for operational units." MGen Campbell claimed success for the project "in closing headquarters, delayering NDHQ, cutting personnel and reducing duplication and overlap," but he cautioned that it would not be clear for some time whether "the ultimate integrity of the headquarters structure as a functioning command and control system" would survive the cuts. He claimed that the long term success of these initiatives would rest on "the meaningful implementation of business planning (with proper performance measurement), the practical application of a working accountability framework, and the proper distribution of resources." He concluded by saying that "The longer term key for success will be the development of a learning organization, where we strive for continuous improvement through professional development and exploitation of ideas. Only through the evolution to and sustainment of a culture which is conducive to all members of the Defence Team working towards a common purpose will we achieve the necessary operational capability and effectiveness."[37]

The effects of the initiatives set in motion by the MCCRT project are difficult to assess. A fundamental problem in gauging the MCRRT's success is the lack of an analytical basis for the reduction targets. With an arbitrary 50% target on headquarters reductions, for example, it became difficult to measure progress against what was achievable. Since there was no basis upon which to assume that the 50% of headquarters that would remain could actually perform the required functions,

it was not possible to differentiate between resistance to change and sincere concern over the effectiveness of MCCRT initiatives. It appears as though the detailed implementation plans called for by the project were overtaken by "the overriding reality" of "the need to cut head-quarters and personnel."[38] Nevertheless, there are strengths and weaknesses evident in the MCCRT process, some of which are summarized the next part of the paper.

SUMMARY OF LESSONS FROM HISTORY

The period 1946-64 has been called "the Command Era" by Bland. The RCN, RCAF and Canadian Army were commanded and adminis-tered by the three Service Chiefs and their efforts were co-ordinated, with varying degrees of success, by the Chairman of the Chiefs of Staff. Bland characterizes the Command Era as one where "command authority, military concepts of decision-making and administration . . . and a reliance on subjectivity based on experience" prevailed. This organization, Bland argues, was "militarily efficient" but seen as "inefficient in the eyes of accountants." Nevertheless, at that time it was generally accepted "that military leaders" and "military norms and values" defined the organizational culture of DND. The period from 1964 to the present is described by Bland as the "Management Era." in which the military culture of the CF was replaced by a more civilian, business-oriented culture based on "concepts of functional unity" and management theories. In this new organization, the chain of command has been replaced by centralized functional entities that "operate in long parallel lines from NDHQ to practically the lowest levels of DND and the CF."[39] This organizational structure has advan-tages, but it has also had a detrimental impact on the chain of com-mand. A former CDS, G.C.E. Theriault, put it this way: "an increasing-ly unwieldy, bureaucratic structure and culture . . . have sustained inflated staffs and, in particular, led to a serious blurring of statutory responsibility and accountability . . . and . . . thwarted the evolution of

a necessary, disciplined, unified military staff system."[40] These issues will be discussed more fully later in the paper.

CF C2 structures have evolved constantly, changing with the environ-ment that surrounded them. Biology provides the best metaphor for understanding the dynamics of C2 systems as they grow, are pruned back, have branches grafted on to them, flourish or wither according to circumstances. Attempts to characterize C2 systems as some sort of mechanical device or rigid, relatively stable structure fail to capture the fluid and chaotic nature of these human-based structures. The only thing that can be said with certainty about any newly minted C2 system is that it will shortly be evolving into something else.
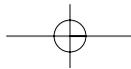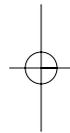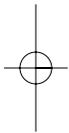
PART 3   AN EVALUATION OF THE
EFFECTIVENESS OF COMMAND
AND CONTROL IN THE
POST-COLD WAR CF

A CRITIQUE OF THE MCCRT
AND SIMILAR MANAGEMENT PROCESSES

What is striking about the account of the MCCRT initiative found in
its own documents is the view that the team was using an innovative
process to "re-engineer" DND. In fact the process was part of a forty
year old attempt to change aspects of DND using various "new" man-
agement theories that has been described as "chasing every new fad
in the marketplace."[41] In an insightful article, David Detomasi of the
Queen's University School of Business points out that since the
Glassco report of 1960 there have been numerous attempts to make
DND more "efficient." However, Detomasi concludes that these
attempts were and will continue to be doomed to failure because even
if efforts at re-engineering appear initially successful, they will "most
likely run aground on the rocks of competing interests and the com-
plexities of national defence." Even the Glassco Commission report
asserted that the evaluation of DND should use different criteria from
other government departments and that efficiency in DND should be
based not on "dollars but rather in the state of readiness of the
Canadian forces . . . "[42] This philosophy has recently restated by the
Auditor-General's office which sees readiness as an essential compo-
nent in evaluating the effectiveness of the CF.[43]

Detomasi argues, and as the MCCRT conceded, defence in Canada is
a complex activity. Decision-making in DND, like many other govern-
ment organizations around the world, is not based only on a rational
approach to perceived problems, but also on "bureaucratic operating
procedures that . . . exclude certain information and viewpoints" and
a "political process in which top administrators bargain for individual
advantage" and in which "dominant personalities" are "often able to
achieve their objectives regardless of the strategic value of their
options." Detomasi goes on to argue that DND often appears inefficient
to outsiders because they do not understand that the Department must

pursue several objectives simultaneously "which are often mutually incompatible." In addition, DND "is not one organization but three, characterized by interactions between military personnel, the permanent bureaucracy and elected officials. Each competes for a greater share of control over the defence planning process and has fundamentally different ideas on how an 'efficient' defence organization should run." The way that many parliamentary democracies, including the United Kingdom from which the Canadian system is derived, have chosen to deal with this conflict between competing interests is through committees which provide a forum where competing military and civilian demands and viewpoints may be "balanced in a workable consensus." This system is not compatible with management techniques designed for "mere efficiency," such as the Programming, Planning and Budgeting System, introduced in the late 1960s and supported by virtually every MND since. Because of this incompatibility, "repeated attempts at instilling greater managerial control" over the defence process "have not led to any permanent, measurable increase in efficiency." This situation has arisen because even leading management theorists have realized, as the Glassco Commission did 40 years ago, that attempting to apply "the business style of management" to government organizations is counterproductive because it "creates the wrong priorities." The administration of defence policy in Canada involves more than importing business definitions of efficiency into DND because attempting "to implement business techniques that stress efficiency and economy in an environment that demands compromise and works by 'muddling through' combines the worst of both systems." The outcome of this "worst of both systems" is "the mistaken belief that a more efficient use of funds will provide the same if not better capabilities" and the disruption of the "clash of ideas and viewpoints that characterize a democracy."[44]

Another related critique of the MCCRT initiative is that there are serious problems in using a management approach to "re-engineer"

defence organizations. As Detomasi notes, determining DND's "core business" in the post-Cold War world is extremely difficult. The phrase "Combat Capable Multi-purpose Forces" often used to describe the CF's "output" is so vague and open to so many interpretations that it provides no precision in defining DND's "core business." Rather, as Detomassi explained, this phrase is used to allow the various stakeholders in the defence process to have wide latitude in bargaining for resources. Given the complexity of the defence process in Canada and the rest of the Western world, this vagueness is typical of the statements that serve as overarching guides to defence policies. They may not be particularly useful in defining efficient management processes, but they provide a vital ambiguity that permits ongoing debate and compromise among defence stakeholders.[45] Strategic-level commanders should be comfortable with such ambiguity and must be prepared to thrive in such an atmosphere.

The MCCRT decision to rely heavily on management techniques as its primary methodology deprived it of insights into the longer term historical, political, and economic context of Canada's defence. The study of command and control is a multi-disciplinary endeavour and it requires the support of all disciplines to get a clear picture of the issues. The profession of arms has a rich history documenting command experiences over the past 200 years that have direct relevance to the issues encountered by the MCCRT. One specific example is the focus in management-based systems on outputs and outcomes. Yet a detailed study of C2 in the Gulf War found that generally senior commanders find it difficult during combat both to distinguish outputs from outcomes and to discover outcomes. In fact the inability to discern outcomes (e.g., damage to specific enemy capabilities) is usually the reason senior commanders often focus strongly on outputs (e.g., sortie rates) which do not necessarily have a direct bearing on the desired outcomes of the campaign.[46] To put this analogy in a Canadian sports context, a hockey game is won by the team that scores the most goals (outcome)

not the one that registers the most shots (output), although there is frequently a correlation between the two statistics. However, a coach that focuses all the effort on output will eventually cause his players to strive to increase shots rather than goals, and games will be lost to teams that increase the ratio of goals to shots. An example of using military history to prepare senior leaders for current operations gives another perspective to the multi-disciplinary approach to C2 problems. The study of Canadian military history by senior Canadian military leaders would have alerted them, before the need arose in the Gulf War and the Oka crisis, to the fact that the CF had very little expertise in mounting joint operations. By virtually ignoring these sources of knowledge, the MCCRT frequently ended up reinventing the wheel and in some cases it made decisions based on good business practices that were not applicable to the profession of arms.

The MCCRT's reliance on the 1994 White Paper for its direction is another source of criticism. The White Paper assumed that with the end of the Cold War and the dramatic downsizing of many armed forces, that "bloated" HQs could be downsized even more than the conventional forces they supported. This was based on the assumption that HQs were essentially C2 organs that could now be cut for dramatic savings. What was not well understood was that higher HQs actually had other functions. As Detomasi indicated, procurement and other civilian liaison activities remained important. But higher HQs also had a research and planning, what has been referred to as a "knowledge," role,[47] and this role actually became more complex in the post-Cold War era. Given the explosion of information now available in the "information age" it could be argued that certain parts of HQs, especially those charged with distilling lessons learned from new types of operations, writing new doctrine to deal with the post-Cold War era, and attempting to deal with the knowledge revolution in the profession of arms, needed to be increased in size. Linked with the failure of technology to deliver on its promise to replace these higher information

management and knowledge functions, as will be discussed later, the cuts suggested by the 1994 White Paper were probably unjustified because they failed to take into account the "thinking" functions of higher HQs. This left them short of the knowledge workers to provide commanders at the strategic and operational levels with the analysis they require. And as Mason and Crabbe have pointed out, drastic cuts in flag and general officers have decreased significantly the number of these officers who are able to get the necessary experience in senior appointments at home and abroad.[48] A CRS report put it this way: "While most of the proposed cuts in senior positions throughout DND and the CF have been made, the centre does not have a corporate view with respect to their impact on organizational effectiveness."[49] Using a biological metaphor, while there was undoubtedly redundancy and overlap in the "brain" (the HQs) of the CF, the widespread, and to some indiscriminate, cuts to the brain had serious implications for the ability of the CF not only to use its arms and legs (operational capability) in the short term but also may have seriously impaired the long-term planning functions of the brain.

The 1999 departmental review of MCCRT supports many of the critiques made by others. While the CRS report recognizes that MCCRT achieved some worthwhile goals, it found that in DND there is "a general belief that re-engineering that crosses organizational boundaries has been limited . . . " and that challenges "still exist with respect to stabilizing the Defence Management System and clarifying relationships between the ECSs and central service providers."[50]

The CRS report also notes that: "One of the two major goals of MCCRT was the reduction of resources consumed by strategic and operational level headquarters throughout the CF, with a view to redirecting those resources to operational capability." As was noted earlier, the 1994 White Paper assigned a reduction of at least 33% in headquarters personnel and resources; however, this goal was subsequently

increased to a "stretch target" of 50% by senior management. One of the reasons for the lack of success in implementing resource reductions in the manner recommended by the MCCRT was that the meaning of this target (what was the precise goal – personnel and/or resources?) gradually became confused and was disputed by many stakeholders.[51] Indeed, many acrimonious debates developed over the metric – was the target 50% by numbers of personnel, 50% by costs or at least 50% in both? Ultimately the focus was on numbers of personnel, resulting in many lower salaried positions being sacrificed to maintain staff officers. This in turn created the situation where many highly paid senior officers ended up spending a significant amount of their time performing duties that clerks had once taken care of. In addition to personnel and resource cuts; however, new processes were introduced into DND by the MCCRT.

A fundamental change in the way DND planned and managed its resources was the business plan. Yet, many who support business planning conceptually in DND view the process as "too complex, too time consuming, not effective as a management tool and not user friendly." The CRS report found that: "Some of the demands placed on business planners are viewed as of little or no value for the effort expended and/or not achievable because of the lack of necessary data or tools."[52] The real problem in the eyes of many critics of business planning is that this is yet another management tool that can be useful in a supporting role but which is now inappropriately driving many military planning processes.[53] This business tool is unsuitable as the key planning tool for DND (and some other) government organizations because, it creates the wrong priorities. In fact, some of the reasons behind today's HR crisis in the CF can be directly attributed to the business planning concept of efficiency and the bottom line replacing the warrior ethos in the military. This subject will be discussed in more detail later in the paper.

Another issue critical to effective C2 in the CF is the concept and practice of accountability. The CRS report states that the current state of "an over-arching DND/CF accountability framework model is still a work in progress, especially in terms of definitions, the types and nature of accountability, the relationships between organization and process owners, lateral accountability and other related concepts."[54] While the new Authority, Responsibility and Accountability (ARA) document is a step in the right direction "this initiative does not fully address the requirements of an accountability framework model . . . it is becoming out-of-date as a result of organizational changes . . . " and there "still appears to be some degree of confusion with respect to certain accountability concepts . . . ," according to the CRS report.[55]

Perhaps the most disturbing conclusion of the CRS report on the outcome of the MCCRT reorganization initiatives on the CF is that "the centre does not have a corporate view of the impact or effectiveness of reorganization."[56] Part of the reason for this is the information management problem, which is described in more detail later in this paper. Another reason for this situation is that there is "a generally held view at all levels that strategic guidance is incomplete and that further guidance is required to address" the priorities and affordability of some of the reorganization initiatives. A systemic reason for a perceived lack of progress in the MCCRT process is the high turnover in senior management which has led "to some loss of focus" on the way ahead.[57]

This last reason for a lack of progress in implementing MCCRT initiatives stems from a misunderstanding of the importance of the role organizational culture plays in change processes. The MCCRT did not seriously address this issue and admitted to a lack of understanding of this so-called "soft" concept. Because the "opportunity to provide some strategic direction as to the desired culture of DND and the CF was not exercised . . . ," momentum was lost and the issue has not

been followed up.[58] A. M. DeQuetteville, the first MCCRT leader, later observed that the team's reorganization initiatives were often stymied by the fact that "nobody was prepared to sacrifice anything" and each organization guarded its own "rice bowl" ferociously.[59] This lack of a cohesive CF organizational culture committed to real change is likely to remain constant in the near term as the primary responsibility for culture change has now "reverted to the ECSs and Group Principals" and that "[i]ndividual organizational efforts vary." Therefore, the CRS report argues that "there may be value in developing a DND/CF model for culture change and more clearly defining the desired organizational culture" from a central perspective. Critics have "suggested, however, that this exercise will be futile until we define and reach alignment with respect to strategic direction."[60]

In 1999 the CRS report described the outcome of the latest reorganization initiatives in rather bleak terms. It stated that: "There is a general belief that downsizing, coupled with increased workloads and delays in technology enablers, has contributed to continuing low morale and high levels of stress and stress related problems in many NDHQ organizations." While this situation may be "consistent with the middle phase of change in many large organizations as reported in change management literature," according to the CRS report,[61] it is of little comfort to those who are responsible for the day-to-day operations of the CF. They must deal with many difficult issues, not the least of which is the current CF HR crisis, and two years after these observations were made, there is no end in sight to the perception of low morale and high stress in DND.

THE MASON-CRABBE REPORT

The latest in a series of reports on C2 in the CF, "A Centralized Operational Level Headquarters," referred to as the Mason-Crabbe Report after its authors VAdm (retired) Lynn Gordon Mason and LGen

(retired) Raymond Crabbe, was delivered to DND in Dec 2000. Its genesis was a concern by the senior leadership of DND that the MCCRT reforms had not been fully carried out, and, therefore there were flaws in the current CF C2 system. In addition, some believed that the concept of a single operational level headquarters to replace the current nine operational level headquarters had not been fully explored. Therefore, in July 2000 the VCDS directed that a study be conducted "to re-evaluate the concept of a centralized operational headquarters." The original terms of reference of the Mason-Crabbe Report were quite narrow and only "involved the comparison of a single centralized operational level headquarters with the headquarters' organization that currently exists."[62] Like other reports written in the past decade it laboured under the handicap of a lack of data on key issues.[63]

The Mason-Crabbe Report identified a number of questions that have perplexed, and continue to plague those studying changes in C2 in the CF. Some of these problems are conceptual in nature. The first of these is confusion about the meaning of the terms strategic, operational, and tactical in the CF. While the Report provides definitions for these terms,[64] the definitions used in the Report are not accepted universally inside and outside the CF. This creates significant conceptual problems for those involved in studying C2 in the CF. Of equal concern, is the fact that even when these terms are used in generally accepted ways, the CF constantly violate the doctrinal principle of allowing each level, strategic, operational, and tactical, of HQ to do its assigned job. There are numerous examples, as the Mason-Crabbe Report documents, where HQs perform functions above or below their doctrinally sanctioned level, with operational HQs being "frequently required to assist the strategic level in completing and maintaining operational plans," and NDHQ, the strategic level HQ, sometimes taking command of tactical situations in "sensitive" situations.[65]

Another difficult conceptual issue running through discussions on CF C2 is trying to establish a clear line between force generation and force employment. As Mason and Crabbe have demonstrated, there are many nuances to this problem and it defies an easy solution. For example, there are two chains of command for "forces assigned to contingency international operations as well as to large and/or politically sensitive domestic operations" with these forces being under the operational command of the DCDS while remaining under "administrative command of the parent ECS during operations." Another example of the complex relationship between those involved in force employment and those involved in force generation is illustrated by the new National Military Support Capability (NMSC) which is designed to provide sustainment for contingency operations, while the ECSs "will continue to have responsibility to provide sustainment support beyond the first rotation."[66] A primary concern that impacted on the NMSC concept was the source of the positions required to stand up the organization. The CF have become so critically short of positions and personnel that, although the requirement for the NMSC capability was accepted, none of the ECSs was willing to give up ownership of their support personnel in return for the new capability that the NMSC was supposed to provide. In addition, reservations have been expressed about the ability of the NMSC to adequately deal with personnel sustainment issues given the convoluted CF personnel administration structure.[67]

The constant violation of doctrinally sanctioned principles and the quick, and often informal, reordering of the chain of command that has characterized post-Cold War CF operations is nothing new to either the CF or other Western armed forces, as we have seen. This highlights, however, the need for flexibility in C2 systems and an organizational culture that encourages the flexibility required to accommodate volatile situations. But this flexibility needs to be founded on a clear understanding of certain concepts. The understanding of these concepts

is related to some of the problems raised in the Mason-Crabbe Report and previous CF C2 studies and to three themes that run through the literature on modern warfare theory: the meaning of the term operational, how each service thinks about and applies doctrine, and how jointness is interpreted by various services. These themes will be discussed in the sections that follow.

THE MEANING OF "OPERATIONAL"

A recurring problem in the debate about restructuring C2 in the CF is confusion about the precise meaning of the terms strategic, operational, and tactical, particularly the term "operational." The Mason-Crabbe Report refers to the current nine operational level HQs in the CF,[68] yet notes that they also perform functions at the strategic and tactical levels, not to mention force generation activities. There is little doubt that the allies with whom the CF are mandated to have "seamless operational integration at short notice"[69] would have some difficulty recognizing all nine as operational level HQs. To help to overcome this terminological confusion it is necessary to understand the evolution of the term operational and to recognize that it means different things to different people and different organizations depending on the context.

The word "operational" as used by the English-speaking militaries of the world has a number of meanings. The term "operation" has been in use since at least the 17th century to describe what European armies did in the field and in this context the conduct of operations was an integral part of strategy.[70] During the first half of the 20th century, "operational" came to mean "engaged in or connected with active military operations as distinct from being under training or in reserve."[71] This was the meaning used by Canadian and other Commonwealth air crews in the Second World War to indicate that someone was ready to go on "ops" as opposed to still being in training. This connotation is still in use today in the CF in the term Operational Training Unit

(OTU), and can be found frequently in many official and semi-official documents. For example, "Adjusting Course" a document describing Canadian naval strategy notes that "Canada's armed forces are likely to be operationally busier . . . " at the beginning of the 21st century (in the context of active military operations).[72]

The more recent use of the term "operational" in expressions such as "operational level of war" and "operational art"[73] has given another meaning to the word in a new context, and there is some consensus in the use of "operational" when referring to levels of war (or conflict) in the military forces of the Western world. Canadian and US joint publications tend to use the term operational to describe a way to link strategic goals and the tactical employment of forces. It is generally agreed that the operational art involves the planning (ends), conduct (ways), and sustainment (means) of major operations or campaigns.[74]

The official Canadian definition is as follows:

> " 1.   The operational level of conflict is the level at which campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives within theatres or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives.
>
>   2.   The operational level is not defined by the number and size of forces or the echelon of headquarters involved . . . Regardless of its size, a military force tasked to achieve a strategic objective, is being employed at the operational level."[75]

The official Canadian definition encompasses much of the substance of other countries' definitions of the operational level except the second point, as most of our allies, especially the Americans, tend to see operational level forces as theatre-level forces (such as fleets,

numbered air forces and multi-corps army formations), all of which are beyond the capability of the CF to raise in peacetime. This raised the perplexing issue of whether, in peacetime, Canada could ever be involved at the operational level. The question was addressed in an article by Colonel K.T. Eddy in1992. In it he argued that, contrary to prevailing US doctrine, "no single echelon of command is uniquely concerned with operational art . . . In principle, any commander whose task is the achievement of strategic goals is functioning at the operational level . . . " He asserted that in a Canadian context operational art could be exercised not only in major conflicts but also "in lesser operations such as ensuring safety of national citizens in a foreign country or providing aid to civil power . . . " This re-interpretation of the orthodox American view of operational art dealt with the Canadian problem of not having forces large enough to qualify for "operational" status, by American standards. However, this Canadian approach, by attempting to relate the concept of operational art to everything from internal security to peacekeeping, drug wars and more, Jack English cautions us, may invite only conceptual muddle.[76] Shimon Naveh, a leading theorist of the operational art, goes so far as to assert that the wide diversity of interpretations of what constitutes the operational level of war gives rise to grave doubts about its validity and whether a distinct operational theory is even needed.[77]

The Canadian viewpoint aside, despite the superficial consensus found in many official publications, there are still many different ways of looking at the operational level of war (or conflict). Over the last decade, and especially since the Coalition victory in Gulf War, the term "operational" has achieved buzzword status within the US Army and joint communities, but a good deal of confusion still surrounds its meaning and significance.[78] In his seminal 1987 article on the operational level of war, Edward Luttwak noted that the absence of any term in Anglo-Saxon military terminology to describe what happened between the tactical and strategic levels of war meant that most

English-speaking military professionals were unable to think about or practice war at the operational level.[79] However, once the term "operational" was adopted, albeit from a foreign setting, the ability to conceptualize at that level of war followed, according to Luttwak's argument. Luttwak recognized the importance of the integrative nature of the term because he believed that it bridged and combined unique qualities of each level of war, i.e., the abstract contemplation at the strategic level of war and the mechanical action at the tactical level of war.[80] While this analysis of the operational level of war might hold true for specialists in land warfare, it is not universally accepted in other war fighting communities.

Navies have traditionally looked at warfare in a different light than armies (and air forces). The USN, due to its structure, which includes land (marine) and air components, argues that it can act independently of armies to further national interests abroad.[81] This same trend, albeit in a middle power's navy, has been mirrored by Canada's Maritime Command in the title of its May 1998 Sea Power Conference: "The Canadian Navy as an Instrument of Foreign Policy: Past, Present and Future." Therefore, navies have generally avoided the term "operational" preferring the term "doctrine" instead to indicate what lies between maritime strategy and tactics. For navies, it is doctrine, not the operational level, that has been the "bridge between the naval component of the nation's military strategy and its tactics, techniques and procedures."[82] Nevertheless, western navies have recently begun to use the term "operational" more frequently when discussing their roles in joint operations.

In the joint context the word operational has usually been used in ways that reflect its US Army origins.[83] General Donn Starry, Commandant of the US Army's Training and Doctrine Command (TRADOC) from 1977-81 has been credited with leading the post-Vietnam renaissance in American military thought that moved it from

the "technical shallowness of an incoherent tactical doctrine to an advanced operational consciousness."[84] The 1986 version of FM 100-5, the US Army's final pre-Desert Storm operational level doctrine manual, has been hailed by many writers as the apotheosis of operational level doctrine. It was dominated by an attempt to redefine the operational level of war, and for first time in US military usage, an Army capstone manual actually defined operational art. In this publication, the essence of the operational art consisted of identifying the enemy's operational centre of gravity and concentrating superior combat power against that point to achieve decisive success. This doctrine resulted in a holistic and integrated view of warfare, according to Swain.[85]

There is still considerable debate in the literature whether the current version of American operational art has its roots in Soviet "Deep Operations" or German blitzkrieg. Regardless of its origins, what is most striking about US Army's adoption of operational art as a guiding principle for war fighting was that the process was almost entirely "synthetic, abstract and imitative," and that the process required substantial negotiation among the various competing interests ("tribes" to use General DeQuetteville's expression) in the US Army.[86] The whole process of developing this doctrine fits Detomasi's description, as outlined earlier in this paper, of how decisions are actually taken in Western military communities. Negotiation, compromise, and consensus building, not measures of efficiency, determine the outcomes of this process.

A collateral effect of the adoption of American Army concepts of the operational level of war is the ascendancy of the idea that manoeuvre at the operational level could make up for inferior numbers in the context of a NATO land battle against Soviet forces. Consequently, for many, the operational art implied having the dynamic character associated with manoeuvre warfare. In this interpretation, often referred to as operational manoeuvre, the army is the lead manoeuvre element and

38

air and naval forces play supporting roles. Those who believe in this vision of future war often look to the final land battle of the Gulf War as a model for future war. But as Jack English notes, the staggering logistics and staff planning required during the Gulf War should serve as a reminder that these dimensions, as much as sweeping battlefield manoeuvre, characterize the operational art and that the mundane business of movement calculation still seems to lie at heart of this level of war.[87] Brigadier Robert Fry (Royal Marines) offers another critique of those who advocate operational manoeuvre as the foundation for future doctrine when he argues that current concepts of manoeuvre do not come from historical precedent but from "contemporary circumstances – social and cultural as much as military – amongst which the patent unacceptability of any alternate doctrine which implies attrition is paramount."[88] Another doctrine that emphasizes minimum attrition, and minimum friendly casualties has been championed by some air forces, particularly the USAF and the RAF.

While US Army was struggling to re-define its role based on the operational level of war in the 1970s and 1980s, the USAF and other Western air forces maintained their strategic orientation based on the ideas of the original air power theorists Douhet, Mitchell, and Trenchard. The principal lesson that the USAF (and some in the USN's naval aviation community) drew from Vietnam was that the massive application of strategic air power, during the Linebacker II campaign (18-29 Dec 1972), had singlehandedly brought the war to a successful conclusion and that if air power had been used correctly (i.e., strategically) in that conflict, it could have been ended eight years earlier.[89] This view has been reinforced recently by Operation Allied Force, the 1999 air campaign in the Balkans, in which some airmen have claimed the ability to achieve strategic ends by themselves. Air Commodore Andrew Vallance, RAF, summarized it this way: "There is no factual basis to the belief that, in land/air campaigns, the purpose of aviation forces must always be to support the land forces. Airpower can and

often has acted as lead element in land/air as well as maritime/air oper-ations, and – as capabilities grow – is likely to do so with increasing frequency."[90] This has led the USAF and other air forces to see manoeuvre more in the context of John Boyd's "observation-orienta-tion-decision-action" (OODA) loop as an intellectual, rather than physical, activity to exploit the confusion and disorder of battle.[91]

Besides differences in the interpretation of the term "operational" and "manoeuvre" among services and countries, there are other issues that limit the effectiveness of the application of orthodox operational theory as found in Canadian and US doctrine manuals. A number of commen-tators have pointed out that current doctrine explains that the opera-tional level is the link between strategic objectives and tactical action. But what if no rational policy aims exist or if the aims are only rational in the context of domestic politics but not necessarily in the context of an enduring national strategy? Jack English reminds those who expect that supporting objectives will cascade with logical precision from war aims, that British politicians refused even to permit rigorous debate of war aims in the First World War,[92] and this has its parallels in recent operations in the Balkans. Canadian military history is replete with similar examples where strategic direction is not forthcoming because governments do not wish to be pinned down by formally stated strate-gic aims.[93] A contemporary Canadian example of "insufficient national strategic planning and guidance," in Operation "Assurance" (1996), highlights the fact that the CF rarely get the strategic direction they require from a doctrinal perspective.[94] Therefore, history alerts us to the fact that the fundamental premise of US, and Canadian, operational level doctrine, that the operational level will be the link between strategic guidance and tactical implementation, may be confounded more often than not in Canada's case.

Another critique of the levels of war concept underlying much joint doctrine is that it may be no more than a set of labels designed by and

for the US Army and not particularly useful for relatively small armed forces, according to Martin Dunn, Chief Research Officer of the Australian Directorate of Army Research and Analysis. He also points out that the type of conflict we are likely to see in the post-Cold War world has its parallels in Communist revolutionary warfare and in successful counter-guerrilla campaigns (e.g., Malaya) where military and political decision-making were impossible to separate "at the local level, let alone the national" level.[95] This view is also reflected in the writings of Jack English who reminds us that since the operational art originally sprang from the need to manoeuvre large formations, it remains to be seen if it can be properly applied to small armies in pursuit of strategic objectives.[96]

The basic concept of discrete levels of war has also been criticized by Richard Simpkin who argued that technological advances coupled with manoeuvre theory had lowered the threshold of what previously constituted the operational level of war.[97] Douglas MacGregor has taken this hypothesis further and suggested that new lethal precision guided munitions (PGMs) and greatly enhanced surveillance capabilities will allow smaller combined-arms combat formations to operate in a dramatically deepening battlefield, and that because actions at every level of war instantaneously affect each other, the net result could be that the current three levels of war might be collapsed into one level where the tactics of fire and movement are linked directly to the strategic goal. In this scenario the three levels of war, as separate and distinct levels of command and functional responsibility, will be "spaced and timed out of existence."[98]

A variation on this critique of the strict separation of the levels of war is based on nuclear proliferation in the Third World which implies that the controversy over the use of nuclear weapons did not die with the Cold War. Steven Metz claims that, in this context, the nature of nuclear weapons "means that even operational-level doctrine must be

totally imbued with what are usually considered strategic-level
issues . . . "[99]

All of this suggests that the definitions that support any future C2
structures must be flexible enough to deal with unpredictable changes.
Jack English reminds us of the dangers of inflexible compartmentaliza-
tion of war because it can lead to a proprietorial tendency of those
working at one level to decry importance of other levels.[100] This
returns us to the philosophy articulated by General Hansen at the
beginning of this paper that command arrangements must be flexible
and that the nature and levels of command required for any given
purpose "will be dictated by the operations factors of time, forces,
and space."[101]

HOW THE SERVICES USE DOCTRINE

Another issue that causes confusion in thinking about C2 is how each
service (or environment in the Canadian context) thinks about and
applies doctrine, because each service looks at doctrine differently.
This is an area that has not received much attention from Canadian
scholars, but how the US services think about and apply doctrine has
been studied by some American researchers. For example, the late Carl
Builder, a leading American analyst of the US defence establishment,
asserted that the US Army, Navy, and Air Force have "distinct and
enduring personalities," and that despite minor evolutionary changes
these personalities would remain essentially stable "for a very long
time." He described the differences among the American services as
follows. The touchstone of US Army's organizational culture is the art
of war and the profession of arms; in other words concepts and doc-
trine are the glue that unifies the army's separate branches. For the US
Navy, the heart of its organizational culture is the navy as an institu-
tion, based on tradition plus a maritime strategy, that provide coher-
ence and direction to the navy. The US Air Force in contrast, he

declared, has identified with platforms and air weapons rooted in a commitment to technical superiority, and it has transformed aircraft or systems into ends in themselves.[102] Builder does not discuss the US Marine Corps culture in detail, but it has been described as worshipping "at the altar of its uniqueness," and because of its unique roles, it has not been as strongly affected by the end of the Cold War as the other US services have been.[103]

Doctrine has a central place in the way armies do things because the US Army, and other western armies, use doctrine to bind its tribes (infantry, armour, artillery, etc.) together. Compared to western navies and air forces, armies produce a huge volume of doctrine that is meant to guide the behavior of its tribes when they work together.

Navies are constituted differently from armies and this is reflected in the way they view doctrine. As we have seen, they tend to see doctrine as the "bridge between the naval component of the nation's military strategy and its tactics, techniques and procedures."[104] For 200 years the USN kept doctrine "at arm's length for fear that a binding set of principles might restrict the initiative and independence of the captain at sea – the very foundation of naval combat" and strategy and tactics were therefore substituted as the focus of debate. But according to Grant, Desert Storm's joint-force air attack procedures jolted the USN out of its independent operations posture and in response, the USN established a Naval Doctrine Command in 1993 in part to provide the doctrinal foundation for its statement of maritime strategy "From the Sea" (1992) and *NDP-1, Naval Warfare* in 1994, which asserted that in littoral warfare naval forces "act alone when required or serve as the node of control for a joint force."[105]

In theory, USMC doctrine is part of USN doctrine, but the Marines have generated their own concepts of manoeuvre operations ashore (Operational Maneuver from the Sea) and now ship-to-objective maneuver (STOM) to compensate for what they see as an overly

maritime focus in USN doctrine. One can see from descriptions of USMC doctrine in the professional military literature that, due to their focus on amphibious warfare, the Marines use the terms "operational" and manoeuvre quite differently from the other three US services.[106]

As early as 1945, US air forces espoused three categories of doctrine: basic, operational, and tactical, but, as James Mowbray has detailed, enduring problems in institutionalizing the writing of air force doctrine resulted in the USAF being far behind the US Army in producing comprehensive doctrine. Mowbray's description of the doctrine writing personnel in the Air Staff as lacking "meaningful continuity, historical knowledge and skill or operational expertise above the cockpit level" resonates in the current Canadian air staff doctrine organization.[107] Doctrine has always taken a back seat to technology in the air force culture, and, therefore air forces do not put the same emphasis on it that armies have historically.

Little research has been done on these issues in a Canadian context, but even a cursory look at the resources the three environments have devoted to doctrine development and writing and how their doctrine is articulated indicates that the general approach towards doctrine of the American services probably applies in Canada too.[108]

"JOINTNESS" IN MODERN WARFARE

Because the command and control systems of the CF will have to deal with "a very significant increase on joint operations" in the future,[109] an understanding of precisely what is meant by the term "joint" is required. While definitions of the term joint are fairly consistent in Western doctrinal manuals,[110] the actual interpretation of how joint operations should be conducted varies widely among services and nations. This section of the paper is designed to give the reader a sense of what various people really mean when they use the term "joint." It is critical to understand their differing meanings as differences in

44

concepts have a vital impact on the design of C2 structures, especially when they interact with our allies' C2 structures.

As a matter of policy over the next five years, the Department of National Defence (DND) intends to "manage our inter-operability relationship with the US and other allies to permit seamless operational integration at short notice . . . to Develop a comprehensive program to adopt a new doctrine and equipment compatible with our principal allies . . . and to Expand the joint and combined exercise program to include all environments and exchanges with the US." A commitment has also been made to incorporate "the application of RMA-based concepts" into DND, especially in the realm of command and leadership. In part, this policy is based on the assumption that our closest neighbour "will in all likelihood remain the dominant global power."[111] The deliberate choice to embrace key tenets of the US armed forces' philosophy and doctrine by the senior leadership of DND is not a new phenomenon, but part of tendencies that have been remarked upon since at least the Second World War. However, because Canadian policy makers have articulated a vision for the CF that calls for a close working relationship with US armed forces, it is important to understand what joint operations mean to them.

The 1986 Goldwater-Nichols Act has often been cited as the real beginning of jointness in the post-Second World War American armed forces. The key effects of Goldwater-Nichols were (1) to make the chairman of the Joint Chiefs of Staff the principal military advisor to the Secretary of Defense and the President; (2) to enhance the powers of unified commanders in field (the CinCs); and (3) to increase the significance of joint assignments for senior military officers making joint duty a requirement for promotion to flag or general officer rank.[112]

Despite the legislated jointness imposed on the US armed forces, there are still many interpretations within them how this concept should be

applied. These interpretations are founded on the evolution of jointness in the American military that predated the Goldwater-Nichols Act. After its poor performance in Vietnam, the US Army underwent an intellectual renaissance that continues to this today. One of the key ideas to arise from this renaissance was a focus on the operational level of war from which an emphasis on operational art centred on land warfare as the key to victory emerged.[113] This led to the US Army's quest, supported in some aspects by the USMC, for the predominance of its vision of joint warfare. This vision was accepted by the US Joint Chiefs of Staff and enunciated in 1996 in "Joint Vision 2010"; however, to some in the US Air Force and US Navy this was a thinly disguised attempt by the army to gain pre-eminence among the services, and to relegate the air force and navy to support roles on the battlefield.[114]

The idea that a "joint" vision might not be a unifying concept or that there could be different ideas of what "joint" warfare should be in practice can be difficult to grasp, but as Elinor Sloan of DND's Directorate of Strategic Analysis points out there are significant differences among the US armed services on how "joint" warfare should be conducted. In theory, the American military vision of the future is guided by a series of documents based on "Joint Vision 2010," but in reality the powerful organizational cultures of the various services and the nature of the American defence bureaucracies have led to the development of doctrine that tends to emphasize single-service capabilities and lacks real jointness.[115] A study written by a student on the CF's Advanced Military Studies Course (AMSC) explained it this way:

> The primary advocate of joint doctrine in the United States is the US Army. That service: 'sees jointness as a way to ensure that the other Services remain responsive to Army needs.' The US Navy, by contrast, traditionally feared all doctrine in the belief that: ' . . . a binding set of principles might restrict the initiative and independence of the captain at sea — the very

foundation of naval combat arms.' The United States Air
Force holds to the tenets that: 'strategic aerial bombing can
severely cripple an enemy's homeland, interdict strategic
lines of communication, severely damage or destroy an enemy
at the front, and generally serve as an effective coercive tool'
and vigorously resists any attempts to reshape that doctrine.[116]

Some American commentators have claimed that there are advantages
to inter-service competition because intra-service secrecy is exposed
by the other services, disunity gives civilian authorities leverage if the
armed services do not present a unified front, and competition among
the services spurs innovation and provides multiple perspectives on
defence issues.[117] These considerations are particularly important to
those in the US who accept Carl Builder's hypothesis that the US
armed services have become the most powerful institutions in the
American national security arena and that the military has become too
independent of civilian control.[118] Whatever the advantages or disad-
vantages of closer integration of the US services, it has been pointed
out that despite the "jointness" mandated by the Goldwater-Nichols
Act, the US services still maintain their own separate academies,
uniforms, staff and affiliated civilian secretariat plus a continuing
attachment to certain weapons systems. And in the most recent
large-scale conflict, the Gulf War in 1991, each pursued its own
strategy.[119]

While some have detected a new "joint" culture developing in the US
military,[120] as long as budgets and resources are allocated according to
the Congressionally-mandated, competitive Quadrennial Defense
Review Process, significant obstacles to a real "joint" culture in the
US military will endure. The severity of these obstacles is indicated
by this comment, made in July 2000, by USMC General Anthony C.
Zinni, former C-in-C of US Central Command: "We teach our junior
officers to recognize that sister service as the enemy . . . we fight each

other for money, programs, and weapon systems. We try to out-doctrine each other by putting pedantic little anal apertures . . . in doctrine centers . . . to ace out the other services and become the dominant service in some way . . . Interservice rivalry . . . is going to kill us if we don't find a better way to do business."[121]

CANADA AND JOINT OPERATIONS

The disparity in the organizational cultures of the US armed services has had a significant impact on the CF. Despite the fact that a unified CF would seem to be ideally suited to the integrated approach to modern warfare advocated by "Joint Vision 2010," the major impact of unification in 1968 was upon the bureaucratic organization of the CF and DND, and there was relatively little impact on it in terms of joint operations.[122] Throughout the Cold War the environments (the former three services) of the CF, despite "common uniforms and common rank designation" brought about by unification continued to carry out the same functions, with the same equipment, as the previously separate services had done. There was no comprehensive plan for the elements of the CF to act together as a joint force, and maritime, land, and air formations and units were assigned to NATO or other higher formations piecemeal.[123] In fact, some of the CF's senior leaders, assuming that a "unified force" in theory "should have been masters of joint operations," were surprised to discover in 1990 during the Gulf War and Oka crisis at how little the CF as an institution knew about joint operations.[124] Furthermore, instead of creating its own unified or joint doctrine, since the beginning of the Cold War the CF have had an "obsession" with American defence interests and doctrine.[125] The Canadian air force has been particularly closely associated with the US Air Force and has adopted most of its doctrine and philosophy unreservedly.[126] As a result, many senior air force officers had a difficult time understanding the C2 concepts that were used for organizing the CF's deployed headquarters for the Gulf War.[127] The Canadian navy

also has close ties to its US analogue because the "USN has become the 'industry standard' against which all aspects of naval capability are measured." From the Canadian navy's point of view, even if its forces participate in some form of a coalition without the US Navy, the common ground among those forces that do participate will normally be their compatibility with the American navy.[128] The Canadian army has had a somewhat different relationship with the US Army than the other two Canadian services with their American counterparts. On the one hand, the Canadian army has been part of the group of Western armies that has enthusiastically accepted recent US Army doctrinal initiatives.[129] And like these armies the Canadian army puts a heavy emphasis on doctrine (more so than the navy or air force), and, therefore it has been the premier author of most CF "joint" doctrine. In writing this doctrine the Canadian army has applied many recent US Army concepts, even though it has modified some of the doctrine based on its own experience since the Second World War.[130] Therefore, like US joint doctrine, much of the terminology used in Canadian joint doctrine is "land-centric." This creates some problems in the integration of CF environmental doctrine with joint doctrine, as expressed in the CF Operations manual (*Canadian Forces Operations*). For example, the "land-centric" definitions of deployability and sustainment do not coincide very well with the operational nature of ships. Consequently, the Maritime Command publication, "Adjusting Course: A Naval Strategy for Canada" and Air Command's "Out of the Sun: Aerospace Doctrine for the Canadian Forces," while broadly consistent with the CF Operations manual, lack a direct connection for joint interoperability. Instead, they reflect separate environmental requirements.[131] Therefore, the nature of the tasks and missions of the CF exhibit a predominately, though not entirely, combined flavour. Even apparently "joint" domestic operations, such as "Operation Assistance" (the Manitoba flooding crisis of 1997), were not the epitome of a joint operation. Besides numerous problems with communications and doc-

trine, the air force (true to its doctrinal roots) expressed a preference for centralized (i.e., component or air force) control of air resources as opposed to the control of air assets by the joint force commander (in this case an army officer).[132] The proximity of the Air Command Headquarters and the draft nature of the air force doctrine exacerbated the tension between the air force headquarters and the COS of the Joint Force Headquarters. From the maritime perspective, a senior naval officer rejected labelling "Operation Assistance" a joint operation because, in his view, "A sailor navigating a rubber boat through a wheatfield while reporting to a Land Force brigade commander during the Winnipeg floods is scarcely a joint achievement."[133]

Even though the environments of the CF do not always operate very willingly or very effectively together, they are not deliberately uncooperative. "The officers and non-commissioned members of the CF share much in terms of common training and experience. From basic training through junior and senior leadership courses and the Canadian Forces College to service in the integrated National Defence Headquarters, all this reinforces a common CF point of view. So there is an important start to creating the right culture; however, 'there remains much to be done in the areas of command and control, the organization of infrastructure and joint warfare training.' . . . and Although there have nominally been 'joint operations' since the end of the Cold War, in reality these have been single environment components reporting to a national contingent commander. The components themselves have been subsumed in larger multinational maritime, land and air formations." Despite many exhortations for increased "jointness" among the CF's environments, Canadian participation in the Gulf War was typical of the Canadian armed services' historical propensity for serving as adjuncts to larger allied services but separate from the other Canadian services or environmental forces.[134] Therefore, the greatest force for the adoption of foreign doctrine and philosophy in the CF would

50

appear to be the desire for inter-operability by each of the Canadian environments with their American counterparts rather than the impetus of any overarching American joint vision.

This is not necessarily a bad thing given the state of current American and NATO joint doctrine. A number of Canadian and foreign officers who have studied joint doctrine extensively have cautioned us that because allied joint doctrine "contains serious flaws" and may have been written to resolve national service issues that are not necessarily problems in Canada, we should avoid the current practice of importing large amounts of unmodified foreign joint doctrine.[135] Ongoing CF initiatives to create a Joint Force Headquarters and to refine CF joint doctrine plus the fact that the CF are legally an integrated and unified force have the potential to resolve many of the issues that other militaries are addressing through their joint doctrine.[136] However, the historical record is not encouraging in this respect, as the unification and integration of the CF did not alter pre-existing commitments that sent, and often continue to send, the environments in different directions. Not only had Canada's three armed services never fought as a national force before unification in 1968, they have not done so since.[137] The present state of affairs suggests that tension will persist between a desire to implement truly joint CF doctrine with roles for the three environments to operate together and their desire to remain up-to-date, combat-capable forces which implies close ties with the doctrinally diverse American armed services.

C2 AND CANADIAN MILITARY CULTURE[138]

MGen Campbell identified a central issue related to C2 in the CF when he indicated that the evolution and sustainment of an appropriate organizational culture conducive to implementing the MCCRT's initiatives would be crucial to their long-term success. While there have been some cultural changes in this direction, there is evidence that there

are still serious gaps between the desired and the actual organizational culture required to encourage many of the practices envisaged by the MCCRT.

We know that national and organizational cultures have an enormous impact on the design, implementation, and working of C2 systems. A great deal of research has been conducted by scholars on the effect of the American defence policy making process on C2 issues. The American political system, with its various checks and balances, has been described as "atomized" and this has a number of implications for US C2. A publication by the Harvard U.S. Post Cold-War Civil-Military Relations project has summarized much of the research. While the President of the United States is the commander-in-chief of that country's armed forces, "Congress has the power to raise and support armies, and to provide and maintain a Navy, and to make rules for the governance and regulation of land, sea, and air forces. The federal courts can decide whether the other two branches have allowed military necessity to trample on the constitutional rights of the individual service person without a rational basis. Moreover, this separation of powers and overlapping jurisdictions among the branches, coupled with the openness of the political system, makes it difficult to bring about change in an existing military policy or any other policy for that matter. Thus, the advantage in the American political system, at any given moment, is always with those who favor the status quo or the current policy. In essence, gridlock is the normal state of affairs within the American political system. This diffusion of power allows the military or any group of professional bureaucrats, if they so desire, to play the branches off against each other to resist any change in the current policy. Moreover, since it is the military bureaucracy that must implement the new policy, its members can easily slow down the execution of any policy they oppose. In describing how the Joint Chiefs of Staff tried to undermine his defense decisions, President Eisenhower referred to this tactic as legalized insubordination."[139] Thus, we can

see that by nature the military bureaucracies of Western democracies share many characteristics that might be described as "inefficient" by some management consultants; however, these characteristics nevertheless serve important political purposes.

Unlike our neighbours to the south, not much research on military culture has been published in Canada. However, the studies summarized below are representative of the state of research in Canadian military culture to date and give some idea of how current Canadian national culture and DND organiztional culture may impact on future C2 initiatives.

Since unification the CF have gradually adopted most of the norms of Canadian society and have even claimed a "critical role in defending Canadian values: democracy, rule of law, individual rights and freedoms . . . peace order and good Government . . . and sustainable economic well being."[140] From official bilingualism to the acceptance of gays and lesbians in the military, the CF have often been on the leading edge of change in Canadian society. One interpretation of this phenomenon is that it "reflects a deeper part of the Canadian social and cultural tradition" that is also present in the military.[141] Another point of view is that Canada's military culture has been "demilitarized" by successive governments who have used the CF as a testbed for various social experiments.[142] A third viewpoint is provided by the Canadian political scientist Albert Legault who asserts that "a profound gap clearly exists between society and the Armed Forces," especially in Quebec, and that CF personnel are not "representative of Canadian multiculturalism."[143]

Douglas Bland, at a 1999 Conference of Defence Associations Institute seminar, offers a perspective that echoes some of the arguments made by Detomasi earlier in this paper. Bland argued that the CF are resistant to change because of the "persistent and deep-seated idea in the minds of Canadian Forces officers" that "a tri-service organization of the

Canadian Forces based on the army, navy, and air force is the preferred structure for the armed forces," and that "in all situations and in all times" it is best for national defence. Noting the "obvious benefit that flows to leaders" of the environmental commands (army, navy, air force), Bland suggests that these leaders "see their main responsibility as protecting and enhancing their particular institutions" in the name of promoting a viable national defence policy. However, this structure "perpetuates redundant missions and institutions, prevents the rational distribution of defence resources, and fuels the inter-service rivalries that at times discredit the armed forces before politicians and senior public service leaders," according to Bland. This situation is exacerbated because senior officers gain promotion within their services by "winning resources" for their particular service. At the same time Bland tells us that "few senior officers would be so bold as to advocate the dismantling of a rival service, at least overtly" because they understand that "appearing to share scarce resources protects them from criticism." Therefore, slogans such as "balanced forces" or "general purpose forces," with no agreed meaning, are used "to provide a blanket of civility over the ongoing struggle for place and funding between services who are working for their own interests and not necessarily for the interests of national defence."[144]

Looking back over the past forty years, many commentators, both in and out of uniform, have written about various "crises" in the state of the ethos, ethics and culture of the Canadian military. From this longer perspective, the CF seem to have been in a perpetual state of crisis and debate over these issues. This is not necessarily a bad thing as the ferment and debate over these crucial issues has provided much positive change. A "crisis" of military ethos accompanied the rapid change in both society and the military in the 1960s and 1970s in Canada, as new roles and missions, structural re-organization, downsizing and budget cuts took their toll on the old military ethos that had many of its roots in the generation that had served in the Second World War and were

still in uniform.[145] The CF addressed this problem in a number of ways: a series of reports were written by those inside and outside the CF; a debate appeared in the Canadian military literature; and the CDS instituted measures to address the "crisis" including the circulation of a draft CF ethos statement in 1981 and the commissioning of an "Officer Corps Study" in 1987.[146] These initiatives culminated in the CF Ethos Statement, promulgated in 1997, which was to be "integrated into all recruiting, training, professional development and performance assessment activities at all levels."[147]

Some feel the crisis has not yet abated. The murder of Shidane Arone in Somalia in 1993 and other incidents, including the misuse of public funds by senior officers and unacceptable conduct by members of the CF overseas on operations in the 1990s, has led these commentators to conclude that the CF are still "undergoing a serious erosion of military ethos." Major Robert Near, in a recently published essay, claims that the root causes of the CF's recent difficulties are not fully recognized or understood by higher headquarters. The "checklist" approach to implementing the recent reports' recommendations reflects a lack of any overall strategy, guiding philosophy or priorities in the approach. In addition, the business management philosophies used in the CF, Near argues, has left senior leaders "consumed with fiscal bottom lines" while neglecting the basic truths that military forces are not limited liability corporations to be constantly re-structured, but "living social entities" with cultures that require "care and nurturing." The cause of some of the CF's problems in this area can be traced to the Officer Professional Development system which places ethos, as one of seven core themes, on the same plane as management and technology. According to Near, this shows that the CF "still has a rather incomplete and immature understanding of what military ethos actually is and what function it fulfills in a military organization."[148] In lamenting the triumph of corporate business practices imposed on the CF by the government for reasons of fiscal management, Near cites Granatstein in claiming that the business approach has "triumphed over

military virtues." However, a business approach is fundamentally unsuited to defence or any other public service because this approach will erode the "civic virtues and ethos of these institutions." Near suggests that to be effective the CF needs "a clear, well articulated sense of military purpose" and that the CF must be linked to the government and the citizens of the nation in a "symbiotic relationship." He goes on to argue that many of the leadership failures and deficiencies in professionalism of the past ten years can be attributed to the absence of a clear military purpose for the CF since the end of the Cold War and the CF's continued weak links to the "institutions of government" and the Canadian people. Near claims that the CF cannot expect political leaders or taxpayers to support the CF unless they are perceived as relevant to the country's needs and "subscribes to values that ordinary Canadians support and admire." He concludes that the erosion of the CF's ethos is due to its lack of clear military purpose and its disconnection from basic Canadian values. As a remedy to these problems, Near proposes some solutions. Among them he argues that members of the CF "must see themselves as Canadian citizens first, and military members second." In the future the CF require an ethos based on traditional military virtues and a commitment to professional excellence. Unfortunately, Near contends, the current document titled "The Ethos of the Canadian Forces" is only one variant of a plethora of statements about "values, beliefs and ethics" circulating in the CF, and it is neither well known nor is it embedded anywhere in CF doctrine.[149] In addition it has been criticized by an internal DND review as being inappropriate to support cultural change "especially in relationship to changing management practices, the 'defence team' concept or the unique culture of NDHQ."[150]

Many of the criticisms levelled against the managerial approach taken by some in higher headquarters are also reflected in the perceptions of those deployed on operations. The Debrief the Leader project has summarized some of these perceptions, described as pervasive, as

follows: "Many of the problems faced relate to perceived problems with senior leadership and senior national headquarters. These problems were identified as lack of capability, lack of competency, careerism, over sensitivity to media influence, passing the buck and lack of willingness to support commanders in the field and trust them to do their job." Some more specific comments from leaders in the field indicated that higher headquarters were not organized in such a way as to be able to understand "actual mission requirements in theatre," and that there was a "general lack of confidence and trust between junior and senior officers, including a major disconnect between commanders and troops in theatre and senior headquarters in Canada, especially NDHQ." In addition to these personal comments, as part of the project data was collected and analyzed that showed that superiors at NDHQ were rated significantly lower than other groups on such factors as moral courage, accountability, and loyalty to subordinates.[151] It should be noted that similar perceptions are shared by members of other armed forces today[152] and are consistent with the findings of the recently published "Ethics and Operations Project Report" and the "First Baseline Survey on Ethical Values in the Department of National Defence."[153] These themes recur constantly in the CF over the past 30 years as one can see that the attitudes expressed by soldiers in Cotton's work in the 1970s is reflected again in the testimony of soldiers before the Board of Inquiry – Croatia in the 1990s.[154] With the publication of documents like *Organization and Accountability*[155] DND claims to have addressed some of these issues adequately. Yet this publication is really only a description of the ideal state of affairs in DND. With few concrete examples to illustrate the principles outlined in the document and many new directives coming out everyday that run completely contrary to the initiatives described in this document, there is widespread cynicism in the ranks about such published descriptions of departmental values.

In a study conducted for the Canadian army, LCol W. Wild offers his analysis of the reasons behind some the problems in the CF today. He argues that the culture and ethos of the army are in conflict, and as a result "mixed messages are received and hidden agendas suspected by soldiers." This has led to perceptions of unfairness, arbitrariness and double standards by them. Wild also asserts that if the CF, particularly the army, espouse a vocational ethos, then it should look after its members if they are injured or hurt; however, the "ethos" of universality of service has led to those who are not fully employable being discharged from the service. This policy plus evidence that the CF have not always looked after its members properly has led those who perhaps once saw the CF as a vocation to see it now as merely a job, and not a very appealing one at that. This should not surprise us, Wild contends, because the CF emphasize the personal benefits of joining the CF, enrols people using contractual terms of service, and pays people increasingly according to their skills and knowledge, as opposed to their rank. These occupational inducements to join the CF attract people who view the CF more as a job than a career, and, according to Wild, by paying people according to their skills and knowledge, the CF treat their vocations like occupations and their occupations like vocations.[156]

Another reason for the increasingly occupational attitudes of officers in the CF, according to Wild, is the program at RMC. Cadets are promised occupational benefits, a free education plus pay as a cadet and a steady job after graduation. In addition, cadets sign contracts for obligatory service after graduation, but contracts are signs of an occupation not a vocation. Claims that RMC has succeeded in instilling military values in its graduates are contradicted by data that show that the retention rate for RMC graduates is no better than that of other officer entry plans. The increasingly occupational attitudes of the officer corps in the CF has led to behavior that threatens the trust that subordinates put in their leaders, and Wild cites a study by the NCM Professional Development Working Group that found that "NCMs feel they lack the

support of an officer corps more concerned with ticket punching than doing their job."[157]

A member of the Minister's Monitoring Committee on Change in the Department of National Defence and the Canadian Forces, David Bercuson, argues that the crisis of values in the CF arose from the fact that in today's CF military virtues are not rewarded as much as the "managerial, ass-covering, political skills that lead to promotion." Citing a survey taken in the 1990s that there was a widespread lack of confidence in the CF's leadership, he asserted that the Canadian army's deepest crisis is to ensure that army leaders are first and foremost "true warriors whose morality, integrity, and courage" set the tone for the entire force.[158] One of the few empirical studies in the CF on the subject of leadership and trust in units deployed on operations, in this case on Operation Harmony, revealed that as many as 41 % of unit personnel expressed "low confidence" in the leadership of junior officers and that just over 33 % of unit personnel expressed "low confidence" in the leadership of senior officers. This indicates that there are potentially serious shortcomings in leadership in the CF. However, until much more research is done to put these figures in context, e.g., are these numbers comparable to or better than other military forces or civilian organizations, they can only serve to alert us to a situation that requires attention.[159]

Lack of confidence in leadership has also been manifested by situations where junior and mid-level leaders will not pass bad news up the chain of command because they are afraid that this might reflect badly on their own competence. An inappropriate "can do" attitude, where asking for assistance is perceived to be an "admission of inability," has resulted in some cases. These findings have widespread implications for the CF, as Wild cites a 1995 survey which found that "only 17 percent of CF personnel had 'confidence in the most senior levels of the Department to lead us through these difficult times.'" Wild also criticizes the

"Defence Team" concept as meaningless if uniformed members are expected to be vocational and civilian DND employees occupational. Wild concludes that the CF as an institution professes a vocational ethos, but that its culture supports an occupational ethos. He notes that the same "'confusion regarding appropriate role models for military personnel and appropriate military institutions'" noted by Cotton still exist 20 years later.[160] Is this an example of lack of adaptation, as Wild claims, or simply a reflection that there will always be ambiguity and confusion in an era of constant change in society and the military?

Prior to unification in 1968, the Canadian military culture, like most military cultures in the Western world, was a loose amalgam of the three service (army, navy, and air force) cultures, each with its distinctive aspects. Canada is unique among Western nations in the degree that its armed forces have been unified, and this has created a unique CF culture, while certain aspects of the three service cultures have been perpetuated. On one hand, a number of advantages have accrued to the unified CF, particularly its ability to inculcate a joint atmosphere into many aspects of its training and operations. Certain efficiencies have also been realized since the support branches of the three services were integrated. On the other hand, unification has fostered some values and attitudes that are seen by some as antithetical to the military ethos. Most observers believe that since unification the culture of the CF have become more occupational and less vocational. In addition, the bureaucratization and civilianization of DND have led to an ethos within the CF that has focussed more on business practices than the virtues of the warrior necessary in a military culture. Officers, particularly senior officers, are perceived to be more interested in their careers than in service to the nation. Coupled with downsizing and other personnel policies based on an occupational model, this careerism has transmitted the message throughout the CF that the armed services exist in Canada to provide jobs rather than a vocation or calling. But this message has been competing with exhortations to

"service before self" and the truly dedicated performance of most members of the CF in many difficult circumstances. Research by sociologists Soeters and Recht that indicates that Canada, along with Norway, leads other armed services on the path towards what they believe to be the future, more modern occupational model of military forces, seems to suggest that this path is preferable to returning to traditional vocational values.[161] But the result of these mixed messages has been confusion among members of the CF as to what values, attitudes, beliefs, and behavior they should ascribe to.

The disconnect between various levels of the CF in terms of values, trust and confidence, as documented by the reports cited above, has serious implications for the C2 of the CF. With new ways of exercising C2 depending on an organizational culture conducive to delegating authority and responsibility downward, trust and confidence among all levels of command is essential. While more Canadian studies of these issues are required, to date the data gathered by Canadian researchers matches the data published by US researchers indicating serious problems in the US military caused by a dysfunctional military culture.

A study published in early 2000 by Charles Breslin on US Army organizational culture based on a survey of US Army War College students (Lieutenant-Colonels and Colonels) and "company grade" officers (Captains), gives some insight into these problems. His data indicate that "micro-management" is "alive and well" in the military and that the "zero defect" culture, despite its drawbacks, flourishes.[162] Perhaps it is worth recalling that over twenty years ago Gabriel and Savage suggested that the likely outcome of an "up-or-out" career selection system, would be a "zero defect" mentality which would result in a risk averse military.[163] US Army culture today has been described as one that fears failure, and that a "'zero defects' mentality . . . , a mind-set fearing horrible consequences for any failure . . . " was widespread.[164] These views were confirmed by the CSIS study whoe data was collected

at about the same time as Breslin's but based on a much larger (12,500 personnel), and more diverse (all ranks and all services), sample.[165] Some of these attitudes have been detected in Canadian officers over the past 15 years, but more research is needed to confirm that they are as pervasive as they appear to be in the US Army.[166]

The authors of this report can confirm from their own experience that some of these attitudes exist in the CF today. They have observed numerous instances where those from NDHQ, especially general officers, view the system as functional and that authority and responsibility are being effectively delegated. On the other hand, confirming the Canadian studies cited above, even senior officers in the ranks of Lieutenant-Colonel and Major perceive that they are being micromanaged and that NDHQ does not understand what is going on in the field. Sharpe has spoken to a number of COs who express a rapidly growing feeling that they are losing the tools they need to do their job, especially in garrison. Their accountability level has increased, however, as several of the battalion commanders he talked to recently told him that they would advise others not to accept command under the circumstances they have experienced. More and more the centralized agencies are communicating directly with the soldiers, sailors and airmen about policy changes that affect their life. Quality of life has become the purview of the MND, the NIS is a constant presence in the background second guessing discipline and conduct issues, the Maple Leaf announces career policies ahead of the chain of command even knowing about them, and the medical and social work "chain of command" often counsel, move, release or retrain their people without informing COs. The combined effect of all this is to leave the COs powerless in the eyes of their soldiers, and the growing trend towards risk averse behavior at the top of the CF is making it worse. The "two beer a day" rule is often cited as illustrating the depths of the lack of trust that senior leadership has in those in the field. Yet these are not new insights into the effect of the centralization of authority in NDHQ.

As early as 1974, two senior officers observed that "there is hardly an area where all effective authority has not been withdrawn" to the then new NDHQ structure. They noted that this had led to a situation where "accountability follows the chain of command and authority is distributed throughout the staff." The outcome of this new structure was for the various functional commands to have their "enormous authority reach down through separate channels to the lowest field units," while there was "no way they could be held to account for anything short of calamitous failure." The principle to follow they describe to rectify this situation is a timeless one in military history: authority must be delegated with responsibility or leaders will be severely handicapped in exercising command.[167]

The gap between the perceptions of those at the top of the CF chain of command and those in the middle and lower levels is a critical impediment to implementing any new ways of exercising C2 in the CF based on delegation of authority and responsibility and trust and confidence.

THE INFORMATION PROBLEM

Closely related to the issues of delegation of authority and responsibility and trust and confidence discussed above is the of flow information that is a critical component of any C2 system, as the MCCRT noted. The amount of information required for effective C2 is vast and includes not just what is required for day-to-day operations, but archived, and easily accessed information, to conduct follow up studies, extract lessons learned and plan for the future. The MCCRT recognized early in its mandate that DND was facing formidable information management difficulties when it "encountered a significant number of accounting problems and unresolved disputes" over the data it gathered. As a result the statistics it used to justify its reorganization initiatives "were frequently challenged." These difficulties with information management (IM) systems have left force planners, and others,

"virtually blind with respect to personnel statistics" and "have further compounded the difficulties that they now face," according to the CRS report.[168] It attributes this situation to the fact that "personnel establishments were reduced "before the necessary IM tools were in place to support a smaller staff.[169]

Another key information technology decision impacted directly on the ability of CF decision makers to evaluate and select effective courses of action.[170] When the MCCRT selected Powerpoint as one its key IM tools it joined a group often described as "Powerpoint Rangers." Recently, the Chairman of the US Joint Chiefs of Staff issued an edict to simplify Powerpoint presentations because their complexity was overwhelming decision makers and their size was using up classified communications bandwidth, thereby slowing critical communications between HQs and the field. Former Secretary of the US Navy, Richard Danzig, described a phenomenon in the US Department of Defense common to many business boardrooms where senior decision makers sit through briefings with 100 or more Powerpoint slides "with our eyes glazed" over and then finally surrender to "an overwhelming mass" of virtually incomprehensible data. Coupled with the capacity of word processing making it easier to produce "long, meandering memos, the spread of Powerpoint has unleashed a blizzard of jazzy but incoherent visuals," according to one observer.[171] Besides its ability to overwhelm audiences, Powerpoint products lack coherent, well documented arguments. Such presentations, unless accompanied by written analysis, are devoid of the rationale and evidence behind arguments and are of little use to those who wish to understand the reasons behind the adoption of certain courses of action by senior decision makers.

Video teleconferencing (VTC) is another information technology that has had an impact on how decisions are made during operations. Admiral James O. Ellis, C-in-C NATO Allied Forces Southern Europe

during the Kosovo air campaign, Operation Allied Force, observed in a post-operation briefing that the advantages of VTC – its "ability to shorten decision cycles and deliver clear, unambiguous orders, and the elimination of the need for key commanders to be colocated" – had to be balanced against the lack of written records and orders, "as well as the propensity for misinterpretation" as guidance and directions were "filtered down to those who did not witness the exchanges, see the body language or understand the process by which final decisions were reached." Those analyzing the process after Operation Allied Force noted that commanders' intentions "often changed from the beginning to the end of a long session. And that often conflicting guidance was left on the table." Without written records to document, summarize, and confirm key points, confusion sometimes resulted. The air commander, LGen Michael Short, complained that VTC allowed his superiors to micromanage the air campaign to the detriment of its effectiveness.[172]

The problems with C2 structures in the past identified in this section, call for a new approach to C2 in the CF. The next section presents some new ways to think about C2 in the future that are specifically tailored to meet the needs of Canadian commanders.

PART 4   NEW WAYS OF THINKING ABOUT C2 IN THE CF

COMMAND AND CONTROL IN THE 21ST CENTURY - AN OVERVIEW

Command and control (C2) has been conceptualized by Western armed forces for most of the 20th century in terms of technical systems to transmit and receive information or an exercise in designing organization charts that attempt to explain command relationships. Studies of C2 in the CF often refer to "guiding principles" of command, but these have never been articulated in a comprehensive manner let alone in a way that can be used by those involved in modifying C2 systems.[173] However, considerable knowledge in this field is now available to assist modern commanders and their staffs in creating effective C2 models. The aim of this section of the paper is to provide new ways of thinking about C2 in the CF in the 21st century and to discuss the major issues impacting on the development of new ways of effecting C2 in the CF.[174]

Certain elements of the CF have demonstrated increasing interest in the effects of human factors on command because many recent problems in CF operations have been attributed to a neglect of these factors. The emphasis now being placed on the human elements in command does not ignore technology, but stresses that technology must be responsive to human needs. In the past, many Western armed forces have purchased C2 technology without considering how it would serve the commander. This often resulted in ineffective C2 systems that focussed on what the technology could do rather than what outputs the commander needed from the technology to be effective. Another weakness in the creation of C2 models in the past can be found in complex organization charts intended to represent relationships in "the chain of command" which actually existed only on paper. The example of the Gulf War is instructive. Once thought by some to be the epitome of a successful C2 system, the actual Coalition C2 system is now known to have had numerous shortcomings. For example, the formal air compo-

nent C2 structure in that war was circumvented when it was perceived by some to be unresponsive to the air component commander's needs. Most of its organization charts became largely meaningless as informal networks were formed, aided by new technology, outside the formal chain of command. These informal networks eventually usurped many of the functions of the formal chain of command in the conduct of the air war.[175]

Some commentators have suggested that the C2 shortcomings of the Gulf War can be overcome in the future by information superiority or dominance. But lessons from Operation Allied Force, the air war over Kosovo and Serbia in 1999, challenge the belief that information superiority will make the commander's job easier. While the attacking forces had tremendous amounts of data, the data was often not exploited because it could not be interpreted in a timely fashion and transformed into knowledge that the commander could use in his campaign planning and execution. As Admiral James Ellis, C-in-C NATO Allied Forces Southern Europe noted, "too much information has the potential to reduce a military leader's awareness of an unfolding situation." If information is not handled properly it can become "a voracious consumer of leadership and key staff working hours." This, according to analyst Timothy Thomas, is the most interesting and underrated lesson learned from the Kosovo campaign, namely that "information superiority overload can actually hurt mission performance."[176]

New C2 systems and concepts, such as network-centric warfare, based on the Revolution in Military Affairs (RMA) may exacerbate the information overload problem. These new systems are creating a "data revolution" and despite their capacity to collect and distribute vast amounts of data, this will amount to nothing unless commanders and their staffs are able to transform the data into knowledge which can then be used productively.[177] Admiral W.J. Holland's argument that network-centric systems may lead to a change in command relationships based on a

flatter and shorter chain of command implies that this change may also amplify the information overload problem.[178] Critics of the RMA-driven rush to acquire technology without considering its effect on the human beings in the C2 system point to human factors that constrain organizations from embracing technological change. These factors include a zero-defects mentality that leads to an aversion to prudent risk-taking; poorly designed war fighting experiments featuring an overemphasis on technological prototypes and an underemphasis on organizational prototypes; a leadership that does not appear to welcome decentralized innovation and initiative; and widespread satisfaction with current systems despite their failings.[179]

The current debate on command and control has examined the subject from many different perspectives. Thomas Czerwinski proposes a framework based on three types of command style that summarizes many of the concepts in the current debate. He describes the first command style, currently used in the US Army's Force XXI/digitized battlefield concept, as "command-by-direction." This form of command has been used since the beginning of organized warfare, and it is based on commanders attempting to direct all of their forces all of the time. This form of command fell into disfavour in the middle of the 18th century as the increase in the size of armed forces made it increasingly difficult to exercise. Czerwinski argues that "command-by-direction" has been resurrected by the US Army because it believes that technology can provide the commander with the ability to exercise this type of command again; however, he asserts that, because of the size and complexity of the technical support required to support this command style, it will be inadequate and self-defeating if applied to 21st century conflict.

Czerwinski's second style, "command-by-plan," was created by Frederick the Great 250 years ago to overcome the limitations of "command-by-direction." "Command-by-plan" emphasizes adherence

68

to a pre-determined design and it has evolved as the norm for modern military forces in the West. The US Air Force's air campaign doctrine is cited as an example of this type of command model which is characterized by trading flexibility for focus in order to concentrate on identifying and neutralizing an opponent's centres of gravity. Czerwinski claims that "command-by-plan" is useful only at the strategic and operational levels of war, but if too much emphasis is put on adhering to the plan, this method will be ineffective because of its inability to cope with unforeseen or rapid change.

Czerwinski advocates the adoption of a third type of style, "command-by-influence," to deal with the chaos of war and the complexity of modern operations. This command style attempts to deal with uncertainty by moving decision thresholds to lower command levels, thereby allowing smaller units to carry out missions bounded by the concept of operations derived from the commander's intent. The emphasis in this method of command is on training and educating troops to have the ability to exercise initiative and to exploit opportunities guided by the commander's intent. Czerwinski's contention that only "command-by-influence" models are likely to be consistently successful in the 21st century is supported by a number of military communities, especially the US Marine Corps.[180] However, we should be cautious in accepting Czerwinski's conclusions wholeheartedly, not only because of his rather uncritical advocacy of a particular service's chosen command style but also because of his reliance on Martin van Creveld's example of the German "Stormtroop" tactics of the First World War and the blitzkrieg operations of the Second World War to buttress his argument for distributing authority to cope with insufficient information. These two examples have been critiqued by Michael Geyer who noted that blitzkrieg, based on Stormtroop tactics, became operational opportunism with no standard methods or doctrine. Instead, it evolved into the fullest exploitation of local successes with all means often provoking competition among German tactical and theatre commanders and

overlooking strategic and operational goals.[181] This view is supported by Naveh who characterizes blitzkrieg as "the brainchild of opportunistic technocrats." According to Naveh, blitzkrieg concepts spawned a wide variety local patterns developed by officers competing to realize what they interpreted as Hitler's strategic intentions.[182] Blitzkrieg was an amorphous concept, which lacked unity and a coherent theory to support it. It was the opposite of a doctrine and only gained the status of a theory of war in hindsight and with some help from Sir Basil Liddell Hart.[183] Therefore, according to some analysts, it is a poor foundation for a modern command system.

No matter what style of command is chosen, a critical characteristic of any effective C2 system is its ability to learn while it executes its missions. To acquire this ability in peacetime or in times of relative calm, staffs need to practice not so much *what to do* in war or other operations, but *how to learn quickly* what to do quickly when the time comes.[184] The key to creating an adaptable and effective C2 model is the establishment and nurturing of an organizational culture to support it, because innovation in large organizations is usually constrained more by the organization's culture than technology.[185] Whatever technical and structural solutions are chosen in planning a C2 system, programs and policies must also be devised to create an organizational culture that both enables the other elements of the system and enhances the staff's ability to learn. However, recent research has shown that Western armed forces have not been particularly successful in this regard, as dysfunctional military cultures appear to be frustrating the best intentions of some commanders.[186] A recent article by the VCDS, which focuses on technology, processes, and structures, and which rarely mentions the effect of these factors on people, is characteristic of the type of thinking about C2 that has predominated in Western military circles at the end of the 20th century. Change is depicted in terms of the RMA, and technology is the first factor in list of elements driving change today.[187] However, a vital component of the

process for designing and implementing new models for exercising C2 is the capacity to first discover which technologies and structures are most compatible with current or projected future organizational cultures. This means starting with people and working back to technology, structures, and processes. Implied in this methodology is the ability to gauge current organizational culture, then to decide on and articulate any necessary changes, before selecting technology or designing new structures or processes. In fact, experts in organizational culture maintain that leaders' most important functions in an organization are the creation, management, and sometimes the destruction, of organizational cultures. Details of how the process of cultural change may apply to DND can be found in "*Mutabilis in Mobili*: Leading and Managing Strategic Change in DND and the CF."[188] But changing organizational culture is a lengthy process usually measured in years. Therefore, according to experts in the field, effective leaders of complex organizations must be prepared to map out a long range strategy that includes constant monitoring and adjustment of the organization's culture. Coupled with this process is an ongoing program of professional development so that members of the organization will have the knowledge required to implement necessary changes.

It is essential that a C2 system be compatible with the organizational culture of the military forces of the nation for which it is being developed. Canada is fortunate in this respect, because one of the leading comprehensive theories of C2 based on empirical evidence is the product of a Canadian research team. The human factors of command have been the subject of research conducted by Ross Pigeau and Carol McCann of DCIEM over the past six years. Their findings have been acknowledged as ground breaking by the international military research community and are summarized here, based on a paper they prepared for a recent DCDS retreat.

A CANADIAN THEORY OF COMMAND AND CONTROL FOR THE 21ST CENTURY [189]

In a seminal article[190], the defence analyst Greg Foster has described the state of command and control theory as bleak, using words like "inchoate," "diffuse," "conjectural" and "seemingly random." Pigeau and McCann argue that this description continues to reflect the state of command and control today, both in Canada and internationally. Without a good idea of what the purpose of C2 actually is, those responsible for C2 development run the risk of being unduly influenced by organizational fads and new technological developments. A new theoretical approach for command and control is needed, one that will stabilize the concept and allow it to guide policy, doctrine, training, system acquisition, and organizational structure. This part of the paper gives an overview of Pigeau and McCann's new approach.

Whether involved in disaster relief, peacekeeping operations or war, the CF deal in human adversity. Inevitably, the CF respond to and resolves this adversity through human intervention. Any new theory of C2 must assert the fundamental importance of the human as its central philosophical tenet. It is the human – e.g., the CF member – who must assess the situation, devise new solutions, make decisions, co-ordinate resources and effect change. It is the human who must initiate, revise and terminate action. It is the human who must (ultimately) accept responsibility for mission success or failure. All C2 systems, from sensors and weapons to organizational structures and chain of command, must exist to support human potential for accomplishing the mission. For example, C2 organizations that are intended to allocate authorities and define areas of responsibility should facilitate the co-ordination of human effort to achieve mission objectives. If the organization hinders this goal – for example, by confusing lines of authority or by imposing excessive bureaucracy – then the human potential necessary for accomplishing the mission is also compromised.

The challenge, then, becomes one of specifying those aspects of human potential that should guide C2 development.

Pigeau and McCann's framework first distinguishes the concept of command from control, giving pre-eminence to command. They then link the two concepts together in a new definition of C2.

Command. First, they offer a new definition of command, one that is markedly different from the standard NATO definition: *Command is the creative expression of human will necessary to accomplish the mission*. Without creativity, C2 organizations are doomed to applying old solutions to new problems, and military problems are never the same. Furthermore, without human will there is no motivation to find and implement new solutions. For example, rarely does the slavish adherence to rules and procedures (e.g., SOPs), devoid of creativity, produce effective organizations. Indeed, as mentioned earlier in this paper, navies traditionally have avoided "doctrine" fearing it would restrict the initiative of their captains at sea. And as most labour unions know, a good method for hampering operational effectiveness is to "work to rule" or to follow only "the letter of the law." Command, therefore, needs a climate of prudent risk taking, one where individuals are allowed to tap inherent values, beliefs and motivations to marshal their considerable creative talents towards achieving common goals.

It follows from their definition that all humans have the potential to command; that command is an inherently human activity that anyone, if they choose, can express. To limit command only to those individuals who have been bestowed with the title of "Commander," begs the question of what command is in the first place. Notice that their definition allows even junior NCMs to command. If, through their will, they are creative in solving a problem which furthers the achievement of the mission, then they have satisfied the requirements for Command.

But if all humans can command, on what basis do Pigeau and McCann differentiate command capability? What differentiates the private from the general officer? What key factors influence its expression?

Dimensions of Command. They propose that command capability can be described in terms of three independent dimensions: competency, authority and responsibility.

Command requires certain competencies so that missions can be accomplished successfully. For most militaries, *physical* competency is the most fundamental, one that is mandatory for any operational task, from conducting a ground reconnaissance, to flying an aircraft. The second skill set, *intellectual* competency, is critical for planning missions, monitoring the situation, for reasoning, making inferences, visualizing the problem space, assessing risks and making judgements. Missions, especially peace support missions, can be ill-defined, operationally uncertain, and involve high risk. Command under these conditions requires significant *emotional* competency, a competency strongly associated with resilience, hardiness and the ability to cope under stress. Command demands a degree of emotional "toughness" to accept the potentially dire consequences of operational decisions. Finally, *interpersonal* competency is essential for interacting effectively with one's subordinates, peers, superiors, the media and other government organizations. These four aspects describe the broad set of competencies necessary for command.

Authority, the second dimension of command, refers to command's domain of influence. It is the degree to which a commander is empowered to act, the scope of this power and the resources available for enacting his or her will. Pigeau and McCann distinguish between the command authority that is assigned from external sources and that which an individual earns by virtue of personal credibility – that is, between legal authority and personal authority. Legal authority is the power to act as assigned by a formal agency outside the military,

74

typically a government. It explicitly gives commanders resources and personnel for accomplishing the mission. The legal authority assigned to a nation's military goes well beyond that of any other private or government organization; it includes the use of controlled violence. Personal authority, on the other hand, is that authority given informally to an individual by peers and subordinates. Unlike legal authority which is made explicit through legal documentation, personal authority is held tacitly. It is earned over time through reputation, experience, strength of character and personal example. Personal authority cannot be formally designated, and it cannot be enshrined in rules and regulations. It emerges when an individual possesses the combination of competencies that yields leadership behavior.

The third dimension of command is responsibility. This dimension addresses the degree to which an individual accepts the legal and moral liability commensurate with command. As with authority, there are two components to responsibility, one externally imposed, and the other internally generated. The first, called extrinsic responsibility, involves the obligation for public accountability. When a military commander is given legal authority, there is a formal expectation by superiors that he or she can be held accountable for resources assigned. Extrinsic responsibility taps a person's willingness to be held accountable for resources. Intrinsic responsibility, the second component of responsibility, is the degree of self-generated obligation that one feels towards the military mission. It is a function of the resolve and motivation that an individual brings to a problem – the amount of ownership taken and the amount of commitment expressed. Intrinsic responsibility is associated with the concepts of honour, loyalty and duty, those timeless qualities linked to military ethos. Of all the components in the dimensions of command, intrinsic responsibility is the most fundamental. Without it, very little would be accomplished.

Command Capability Space and the Balanced Command Envelope.
Pigeau and McCann propose that competency, authority and responsi-
bility each define one axis of a 3-dimensional volume that encompass-
es the entire space of command capability (Figure 1). That is, military
members can each be positioned in this space, with their locations
specifying the degree and type of command capability they possess.
Individuals with high levels of competency, authority and responsibili-
ty – i.e., occupying the far upper right-hand corner of the space –
represent high levels of command capability, presumably senior offi-
cers. Individuals with low levels of competency, authority and respon-
sibility – i.e., occupying the near lower left-hand corner of the space –
represent low levels of command capability, presumably junior non-
commissioned personnel. Furthermore, they hypothesize that the
command capability of each person in a military organization should
ideally lie inside the *Balanced Command Envelope (BCE)*, a diagonal
column[191] of space running from low competency, authority and
responsibility to high, as shown in Figure 1.   Individuals lying outside
the BCE have reduced command capability due to an imbalance in one
or more of the command dimensions. For instance, an organization
may have put an individual in the position of expecting them to take
responsibility for a situation for which they lack the authority (e.g., the
resources and power) to influence. Alternatively, an organization may
under-utilize individuals with high levels of competency by assigning
them tasks with too little authority and responsibility. The point is that
being off the BCE runs the risk of compromising command effective-
ness – that is, of compromising an individual's ability to creatively
express their will in the accomplishment of the mission.
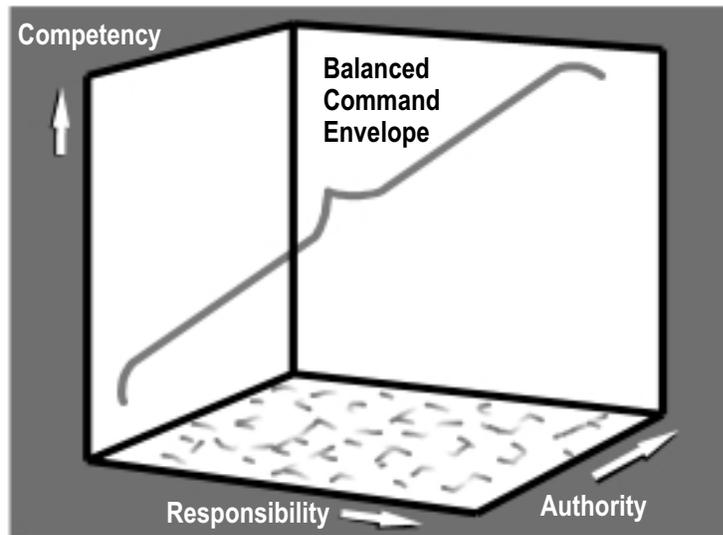
Figure 1. Command Capability Space

Control. Pigeau and McCann's human centred definition of command is a powerful tool for deducing some organizational principles (like the BCE). However, the careful reader will notice that simply specifying command characteristics is insufficient for completely describing C2. How can one facilitate and support, for example, command expression? Under what conditions does the creative expression of will best manifest itself? Alternatively, unbridled creativity can lead to uncoordinated activity and organizational chaos. Under what conditions should the creative expression of will be limited or channelled? The answer to these questions is control. Command must execute control both to 1) support and facilitate creative command, while 2) controlling command creativity. Indeed, much of organizational theory can be seen as the attempt to establish the optimum balance between these two extremes.

They define control as *those structures and processes devised by command to enable it and to manage risk.* Structures are frameworks of interrelated concepts that classify and relate things. The military environment encompasses a host of control structures – e.g., chain of command, order of battle, databases for describing terrain, weapon systems, organizations, etc. Structures are attempts to bound the problem space and give a context within which creative command can express itself. For example, an organization's mission statement is a strategic level structure whose purpose is to give long-term guidance to all members (including managers) in how to apply and channel their motivation and creativity. Once stable structures have been established, processes can be developed to increase efficiency. Control processes are sets of regulated procedures that allow control structures to perform work. They are the means for invoking action. Military rules of engagement, for example, are formal processes for regulating the use of power – for specifying the way in which military structures (e.g., soldiers, battle groups, and squadrons) achieve their objective. Process increases speed of response and reduces uncertainty.

Knowing which structures and processes to invoke in order to achieve operational success is a key issue for command. Recall that their definition specifies that control is *devised* by command. Structures and processes come into existence only through some creative act of human will. What are the guidelines for knowing when new control systems should be developed or when existing control systems should be allowed to continue? Their definition specifies two broad guidelines. First, structures and processes should exist to support command. They should facilitate (or at least not hinder) the potential for creative acts of will. They should facilitate (or at least not hinder) the expression of competencies (physical, intellectual, emotional and interpersonal). They should clarify pathways for legal authority; they should encourage (not impede) the opportunity to establish personal authority. And finally, they should encourage the willing acceptance of responsibility while at the same time increasing motivation in military members. From an organizational perspective, any control system that forces its members off the Balanced Command Envelope will, over time, compromise organizational effectiveness.

The second criterion for knowing when control should be invoked is whether it promotes the management of risk. Pigeau and McCann define risk loosely as anything which jeopardizes the attainment of the mission. This includes uncertainties due to personnel (including the adversary), uncertainties in the environment (e.g., weather, terrain, etc.), and the unbridled expression of creativity, since such expression may lead to chaos. Imposing elaborate control structure and process is one way to reduce risk; however, this would come at the expense of inhibiting command creativity — creativity which, inevitably, is needed for solving new problems.

A tension exists, therefore, between the two reasons for creating control: to facilitate creative command and to control command creativity. Getting the balance right is a perennial challenge for most organiza-

tions. Pigeau and McCann suggest that, as a general strategy, militaries should give priority to facilitating creative command. Mechanisms for controlling command creativity should then be used wisely and with restraint.

Command and Control (C2). Their definitions of command and of control (as separate concepts) were designed to highlight a military's most important asset: the human. However, a military is not simply a collection of independent individuals, each of whom pursues his or her own interpretation of the mission. Militaries are organizations for co-ordinated action, for achieving success by channelling the creative energies of their members towards key objectives. It is this important feature of military capability that they emphasise in their new definition of C2: *C2 is the establishment of common intent to achieve co-ordinated action.* Without co-ordinated action military power is compromised. Without common intent co-ordinated action may never be achieved. In their work Pigeau and McCann have specified some of the issues that must be addressed to elucidate common intent. They include a definition of intent itself (i.e., aim or purpose with associated connotations), an identification of two types of intent (explicit and implicit) and the mechanisms for sharing intent among military members, particularly between superiors and subordinates.

The key concept in their definition is *intent* which is the set of connotations associated with a specific aim or purpose. When a commander gives the order to "Take hill x by 1300 hours," he not only means take hill x explicitly, but also means: "Take hill x while making effective use of your resources, without killing innocent civilians, etc". Thus the commander's intent is made up of two components. The first is *explicit intent*, that part which has been made publicly available through orders, briefings, questions and backbriefs. It includes communications that can be written, verbalized or explicitly transmitted. But it is impossible to be explicit about every minute aspect of an

operation. For expediency's sake some things (actually most things) are left uncommunicated. Thus explicit intent carries a vast network of connotations and expectations – the implicit intent. *Implicit intent* derives from personal expectations, experience due to military training, tradition and ethos and from deep cultural values. Much of implicit intent may be unvocalizable. And it is usually acquired slowly — through cultural immersion or years of experience. Finally, common intent consists of (1) the explicit intent that is shared between a commander and subordinates immediately prior to or during an operation, plus (2) the (much larger) operationally-relevant shared implicit intent that has been developed over the months, and even years, prior to the operation.

Pigeau and McCann's definition of C2 allows for two contrasting kinds of organizational structures. When the proportion of shared explicit intent in a C2organization is high compared to the amount of shared implicit intent, this is indicative of centralized C2. Members of a centralized organization are explicitly told not only what to do in a particular situation, but how to do it. If the situation changes quickly, however, the generation and dissemination of new orders may not be fast enough. On the other hand, if an organization encourages the sharing of implicit intent, the amount of explicit intent necessary to achieve the same level of common intent will be small. In the military context, de-centralized organizations are consistent with mission command philosophy. De-centralized organizations are flexible, but at the expense of efficiency. Note, though, that Pigeau and McCann's new perspective on C2 is intended to be value free. They do not advocate one organizational structure or the other; they wish only to indicate that the idea of common intent is consistent with both.

ISSUES IN 21ST CENTURY COMMAND AND CONTROL

The preceding discussion has raised a number of important issues that should be considered when devising principles to guide future change in C2 in the CF. This section will consider these issues in more detail in their current context.

People First. This is perhaps the easiest principle to articulate, but the hardest to implement in many modern organizations. While this principle is gaining increasing recognition as the primary factor in establishing effective C2 systems, there are still many obstacles to applying it. One way of improving the ability of the human element of C2 to work effectively is to allow people to use their initiative and not be constrained by unnecessary rules. For example, the CF's *Organization and Accountability* document states that: "Today, much greater reliance is placed on multi-disciplinary teams, broad policies, elimination of non-essential rules and more permissive guidelines to enable people to achieve organizational goals with fewer resources. . . . In general, individuals are being given greater latitude to do their jobs, and in so doing they gain more personal and professional satisfaction. . . . The idea is to deal with mistakes openly and to use them as opportunities to improve individual and organizational performance."[192] The sentiment expressed here reflects the military doctrine of Auftragstaktik which pre-dated its recognition in management circles by over 100 years.[193] The problem in the CF today is that mixed messages are being sent to members of DND about these issues. On one hand, the *Organization and Accountability* document tells supervisors to eliminate non-essential rules and to give people greater latitude to do their jobs. On the other hand, DND continues to issue highly detailed rules governing its employees' behavior[194] and commanders in the field are quick to centralize control of small details of an operation denying subordinates the opportunity to exercise their initiative. For example,

in May 2001 after two vehicles detonated land mines during patrols of a road that had been visually swept by Canadian mine clearers, the commander of Canada's troops in the Horn of Africa mission (Operation Eclipse) required that he personally approve all patrol routes, even though he admitted that the two previous accidents had been the result of "very bad luck."[195]

The CF has not been particularly successful in allowing subordinates to exercise their judgement and engage in prudent risk taking, according to the CRS report: "While senior management acknowledges the importance of administrative policy renewal and the need to move away from a rules-based bureaucracy, progress has been slow."[196] These conflicting messages result in a disparity between what researchers call "espoused values," which the organization may promulgate widely often addressing an external audience, and "values-in-use," which actually function as guidelines of behavior in an organization. As we have seen, there is evidence that suggests that a great deal of the lack of trust and confidence between the top and bottom of the chain of command results from what the bottom of the chain of command sees as cynicism at the top for publicly espousing one type of behavior but actually expecting and rewarding a very different type of behavior.[197]

Policies that support the objectives of the organization in encouraging personal initiative is another way to "put people first" in DND. Unfortunately, DND, like many other large organizations, is frequently not aware of the negative second and third order effects that well-intentioned policies can have on its people. In a seminal study on the impact of policies on organizational values and culture in the US Army, William F. Bell, described how even well-focussed and well-intended policy goals, had results that were unintended and undetected by senior leadership, because the personnel system did not take a comprehensive view of the effects of individual policies that were often

devised and implemented in isolation. This had a particularly negative effect of creating a risk averse climate in an organization that, much like DND, was trying to foster initiative and prudent risk taking. However, each policy acted to make officers reluctant to assume risk and each policy compounded the effects of the other. Risk aversion also had what Bell portrayed as a second order effect on ability of the organization to be self-critical, because ideas did not flow freely from individuals who did not trust the organization and who perceived risk taking as career damaging. The lack of communication and feedback in the US Army created a gulf between stated (or espoused) values and practised values (or values-in-use) which grew as individual officers had no way to determine which set of values the Army intended to be used. Eventually this became irrelevant because at some point the new (values-in-use) paradigm became the key to success. Those who adapted to the new (values-in-use) paradigm became the leaders of the Army, and rewarded behavior consistent with the new paradigm making it clear to most officers where the path to success lay.[198] Preliminary research, described earlier in this paper, confirms that similar trends exist in the CF; however, more detailed research is required to determine the exact nature of these issues in a Canadian context. The 1999 CRS review of the MCCRT initiative characterized progress on these issues as "mixed." It further noted that there "is a general belief that downsizing, increased workloads and technology delays have led to continuing lower morale and increased stress," and that a major challenge in the future "will be to translate concepts into practice and to maintain momentum and continuity."[199]

In summary, while the CF publicly espouse putting people first, there is ample evidence to show that there is a long way to go in achieving this laudable goal. Until significant changes in DND's organizational culture are effected, it is unlikely that this will be a credible claim on the department's behalf.

Personality of the Commander. Closely linked to putting people first is the need to understand that every commander has a unique personality and his/her own preferences for how to exercise command. As we have seen with the Canadian example, almost continuous change was a characteristic of the CF's C2 based on the personality and preferences of the CDS or other actors, like the MND.[200] Therefore, those who design C2 models should be prepared to change them to meet the needs of new commanders and other decision makers. In cases where changes in circumstances have caused problems in a C2 system, sometimes the best solution is to change the commander. This is particularly true in a joint environment "where personalities can literally determine the extent of service cooperation."[201] However, if it is not possible to change a commander who is experiencing difficulty exercising command, then every effort must be made to change the structure of the C2 organization or people in it to make the commander more effective.

Flexibility. Different commanders in diverse situations will require different C2 structures; therefore, any CF C2 model should be flexible enough to accommodate each commander's needs and circumstances. General Hansen, a former Commander-in-Chief, Allied Forces Central Europe and now a mentor for many high level NATO commanders, has argued that command structures must retain their flexibility to be effective in the post-Cold War era. He disagrees with those who claim that "all headquarters with a wartime mission at the operational level must be combined and joint." Hansen argues that hierarchical command structures have proved successful in the past because they allow for specialization, attention to detail, and the ability to divide the flow of information into manageable packets. Based on these factors, he contends that certain levels of command should be joint and others "purely functional." Hansen believes that the nature and levels of command required for any given purpose "will be dictated by the operations factors of time, forces, and space." He cites the use of "functional" NATO HQs at the operational level of command for IFOR (NATO Implementation

Force) and the Gulf War as examples of the requirement for flexibility.[202] Canadian experience, as we have seen, confirms Hansen's observations, and Hennessey's depiction of the changes in "normal" CF C2 arrangements for Operation "Assurance" is the latest in a long series of examples of the flexibility that Canadian C2 structures have shown in the past.[203]

Competencies of the Commander. Four years after the publication of the 1982 edition of FM 100-5 at the beginning of the current era of US Army thought on the operational art, one of the leaders of reform in that army called for new types of commanders for this new type of operational level warfare. He claimed that operational level command called for "cognitive faculties" that were distinctly different from those traditionally valued in the US Army, and he asserted that creativity, a previously undervalued commodity among American military commanders, was now "a basic quality required from operational commanders."[204] The Assistant Chief of the Defence Staff of the UK in 1998, MGen John Kiszely, accepted this assertion but wondered whether "This may require a change in ethos greater than that which is achievable."[205] Unfortunately, the outlook is not bright as far as developing the competencies of Canadian commanders is concerned. The relatively small pool of flag and general officers has reduced the number of those officers who are able to get the experience required in senior appointments at home and abroad.[206] Current DP 4 (colonel and general officer) individual training and education (IT&E) is also problematic as it is only being given to approximately one half of the officers who require it. Unless significant changes are made to the current throughput of colonels into DP 4 IT&E, there will be a shortage of general officers with the very competencies required to command the CF in the future.[207] Part of the problem here is related to organizational culture, with significant numbers of those arriving on courses like the Advanced Military Studies Course questioning the value of the course in general and the value of studying subjects like warfare

theory and history in particular. This is perhaps understandable given the current climate in the CF where management skills seem to be valued more highly than skill in the profession of arms.

Organizational Culture. Another key to effective C2 is the culture of the organization because it is the "bedrock" upon which C2 structures are built.[208] In addition, we know that innovation in large organizations is usually constrained more by the organization's culture than technology. The CRS review of MCCRT recognized that ideally "organizational culture should both lead and support organizational and process change and be in tune with strategic direction" and that it was important "to reach alignment with respect to what the culture ought to be." However, even though both the Minister's Monitoring Committee on Change and the CRS review agree that there is "a general dissatisfaction with the status quo and a perceived need to change," there is widespread frustration, as noted previously, with the current DND and CF cultures.[209] Part of this frustration is due to the perceived differences in espoused values and values in use in the CF. And part of it may be due to a fundamental incompatibility between the vocational ethos demanded uniformed members of DND and the occupational ethos exhibited by civilian DND employees. Some have taken this argument even further and asserted that CF as an institution professes a vocational ethos, but that its culture supports an occupational ethos. It is clear from the organizational behavior literature that cultural change, more than new technology, structures, or processes, drives change in organizations. Until the culture of the CF is changed in a meaningful way to support the preferred C2 philosophy of the senior leadership other change initiatives, like the MCCRT, will run out of steam as their individual champions move on.

How Successful Leaders Change Organizations. According to the organizational behavior literature, leaders play crucial roles in shaping and reinforcing culture. Leaders influence how an organizational culture develops based on what they focus on. They communicate their values, priorities and beliefs through what they notice, comment on, measure and control. Modelling, teaching, coaching, and mentoring are powerful tools for shaping culture, and their messages are amplified in times of crisis. If leaders are consistent in what they pay attention to, members receive clear signals about what is important in the organization. However, inconsistent signals spread confusion as members spend a lot of time trying to decipher and find meaning in unpredictable leader behavior.[210] In the CF today many members believe that they are receiving mixed messages about the values the organization says it espouses and those that are really in use.

A change in organizational culture is necessary to remedy the situation, and one way leaders change culture is through their policies, but, as we have seen, these policies can have unintended second and third order consequences. All organizations suffer from the unintended consequences of policies, according to Bell, and it is impossible to avoid them. However, to minimize their negative effects, feedback mechanisms must be in place to track the implementation of individual policies and to continually gauge the "value health" of the organization. In this model, all policies should be evaluated according to three criteria: (1) did the policy achieve the desired end? (2) does the policy reinforce the values of the organization? (3) does the policy work in conjunction with other policies to further the ends of the organization?

Naturally, any challenge to the status quo will cause anxiety and defensiveness, but, Bell argues, the fundamental role of the leader is to do exactly that. He differentiates between managers and leaders, using Edward Schein's model of organizational culture, in asserting that managers are controlled by existing organizational values while leaders

88

shape, create and change the organization's values to develop the culture the organization requires.[211]

Successful leaders pay close attention to all their constituencies and initiate change when required. Nonadaptive cultures are characterized by cautious leaders who try to protect their own interests often by behaving insularly, politically, and bureaucratically. They tend to value orderly and risk-reducing management processes much more highly than leadership initiatives.[212] However, leaders must manage the organizational culture or the culture will manage them.[213]

Learning Organizations. From an organizational structure perspective, General Hansen noted that "one cannot simply create command structures *which work*, especially multinational ones, from scratch." He argues that NATO, and by extension any other military organization must therefore maintain headquarters to keep the capability to operate at the "strategic/operational, joint operational, and service-specific operational" levels of conflict. He emphasizes that it is the principle of maintaining the capability that counts, "not the current number or size of headquarters at each level." Without the capacity to quickly call on the appropriate headquarters at each level, Hansen contends, history tells us that "disaster will beckon."[214] Of course, tied to this notion of maintaining capability is the proficiency of military officers to use their initiative and knowledge to create new structures quickly. To achieve this goal in the post-Cold War world they will require "cognitive complexity, tolerance of ambiguity, intellectual flexibility, self-awareness, and an enhanced understanding of the relationship among organizations and sub-systems."[215] Professional military education is a vital way of nurturing these competencies; however, as we have seen, given the state of current CF officer IT&E this may be problematic.

PRINCIPLES FOR CHANGE IN THE COMMAND AND CONTROL OF THE CF

Based on the analysis conducted in this paper, the following principles are proposed to guide change in the post-Cold War C2 of the CF.

Culture. The organizational culture of the Canadian Forces is unique amongst the militaries that we work with, and indeed amongst other government departments and Canadian businesses. Most failures in C2 organizational changes can be traced to failures to modify the culture to accept the changes or by acquiring technology that is not compatible with the organization's way of doing things. An effective C2 system for the CF must recognize this uniqueness and respond to it, rather than assuming that the culture will change to accept concepts adapted from other militaries or organizations.

People First. The well known, but often neglected, principle of people first must underpin any successful modification to C2 structure or technology. Tapping into the creative potential of the military cadre involved in command related activities will not only significantly enhance the CF's C2 ability to affect outcomes but will increase morale among its members.

Command capability can be defined as a combination of competency, authority and responsibility. In order to make significant progress in developing an effective and efficient C2 system, the CF need to adopt a standard way of looking at C2 – preferably one that reflects the realities of the modern technological environment and the skill sets of the people who make up the command cadre. The model being developed by Carol McCann and Ross Pigeau and used at the DCDS retreat in February 2001 reflects a modern Canadian concept that accommodates both technology and people.

Effective Command demands a balance between Competency, Authority and Responsibility. While this principle is not new, many

of the systemic problems plaguing the CF chain of command today are associated with an imbalance between these factors. Many commanding officers express dissatisfaction with their range of authority, and many serving members of the military do not believe their supervisors possess sufficient authority to affect their well being. Command competencies must be developed and nurtured carefully through a combination of training, education, and experience throughout an officer's career.

Control is a tool of Command and is used here to describe the various mechanisms needed to connect levels of command. Control should support command competency, authority and responsibility. Implicit in this principle is the requirement to understand the limitations of technical systems and to find non-technical solutions to overcome them.

Flexibility. C2 structures should be designed so that they can evolve quickly to meet changing needs. Structures and processes that foreclose on future options should be avoided. To be adaptable to changing circumstances C2 structures should be developed as learning mechanisms that process experiences and use them to improve the system. The unpredictability of future operations requires that any CF C2 system be able to change its control philosophy rapidly to accommodate whatever situations may arise.

Create a "learning organization." At both the personal and organizational level, continual learning and change should be encouraged and rewarded. The higher the level of command, the more commanders and their staffs should concern themselves with maximizing their influence by ensuring a healthy organizational climate and by enabling their subordinates. People who populate the CF C2 system should be able and willing to be creative, flexible and to demonstrate initiative. And these behaviors should be rewarded. Risk adverse and/or micro-managing behavior should be discouraged. Professional military education in the CF should be structured to support these objectives.

PART 5   CONCLUDING MATERIAL

CONCLUSIONS

The principal changes in post-Cold War C2 in the CF were based on the MCCRT initiative which was the latest a series of organizational changes based on management theory over the past 35 or so years. These changes have been difficult to assess by both those inside and outside DND because the CF lack a set of principles to evaluate change in its C2 based on a comprehensive and widely accepted theory of command and control.

Nevertheless, those who have assessed the effectiveness of the MCCRT have found its effects on C2 in the CF to be mixed at best. Some improvements were made to a system that in the early 1990s has been described as being in its worst state in recent history. However, the MCCRT initiative and other changes based on management theory have been criticized by a number of studies.

First of all, the management processes themselves were frequently short circuited and changes were imposed based on financial cuts without looking at the effect these cuts would have on C2 in the CF. The post-Cold War "peace dividend" was the slogan under which, by 1993, huge spending cuts to bring the federal deficit under control were applied to DND. Unfortunately, no serious attempt to understand the post-Cold War environment was made before these cuts were arbitrarily imposed on DND by the government. It is now clear that the "new world order" so eagerly awaited by some after the Gulf War is not the simple, peaceful environment they expected, but a complex, ambiguous conflict-ridden place. This suggests that the CF require different, but not necessarily less expensive, capabilities than were required during the Cold War. This is particularly true of higher HQs which, besides C2 functions, also have knowledge creation roles that have become even more challenging in the post-Cold War era. The failure of technology to deliver on its promise to replace people in performing these knowledge functions has exacerbated these problems.

The arbitrary cuts imposed on HQs by the 1994 White Paper were ill considered because they failed to take into account the "thinking" functions of higher HQs. This left them short of the knowledge workers needed to support commanders at the strategic and operational levels. In addition, the cuts also decreased significantly the pool of flag and general officers who are able to get the experience required in senior appointments at home and abroad.

Perhaps the biggest criticism of the management-based reforms of the past 35 years is that their underlying measure of effectiveness – efficiency – is essentially incompatible with military, and most other public service, organizations. Even in the private sector some of these processes, particularly re-engineering, have not met the expectations of their proponents. And leading management theorists have now realized, as the Glassco Commission did 40 years ago, that attempting to apply "the business style of management" to government organizations is counterproductive because it "creates the wrong priorities." That is not to say that certain management tools, like business planning, cannot be used in the military, but that they are not useful as guiding principles for change. Another fundamental flaw in many of these management theories is that they are based on the assumption that most decisions are made rationally. However, issues like resource allocation and "rice bowls" cannot always be resolved in an entirely rational manner, as we have seen. The defence decision making process is a complex process with elements of rationality interspersed with competition for scarce resources and negotiations that result in solutions, that while not always based on logic, can be accepted by the major stakeholders.

Another critical impact of the imposition of management theories and procedures, such as business planning, on virtually every aspect of the CF has been their detrimental effect on morale. As we have seen, business plans are often viewed by those in the CF "as of little or no value for the effort expended and/or not achievable because of the lack of

necessary data or tools" and that business planning is inappropriate as the key planning tool for DND because, it creates financial not operational priorities. Some of the reasons behind today's HR crisis in the CF can be directly attributed to the business planning concepts of efficiency and the bottom line and its conflict with the warrior ethos in the CF. This is not to suggest that management tools and practices have no place in the CF – they do. But when management tools and practices dominate the organization they have a corrosive effect on the profession of arms. Having the capability to engage in combat is not a business activity, and in many ways it requires measures of effectiveness fundamentally different from "efficiency" as defined by the marketplace. The downsizing programs of the 1990s are one example where a message was sent to the rank and file that they were no longer part of the military team but just another asset to be disposed of when the business plan dictated. This had a remarkably damaging effect on the organizational culture of the CF. But not all problems post-Cold War C2 in the CF were caused by management-based change theories.

Some of the problems raised in post-Cold War CF C2 studies are related to issues debated in the warfare theory literature today, namely, the meaning of the term operational, how each service thinks about and applies doctrine, and how jointness is interpreted by various services. Canadian military professionals involved in the design of C2 systems should understand that current definitions of "operational" vary across services and nations. The definition used in official Canadian doctrine is based on a US Army concept that is not always appropriate for Canadian circumstances given the small size of the CF compared to their American counterparts, not to mention fundamentally different interpretations of these issues by the USN and USAF. We have also seen that each service, particularly the American services, with whom the CF are mandated to have "seamless operational integration at short notice,"[216] view joint operations from a different perspective and use doctrine in different ways. It is clear that the CF need to come to a

consensus on these issues in a way that, while permitting inter-oper-ability with our allies, will also allow for the reality that in a Canadian context they will be seen differently from the way our allies see them.

Another important reason why C2 arrangements in the CF have not always worked well is that many officers have assumed that the CF, being a unified entity, are masters of joint operations. In fact, as we have seen, this is a myth. The CF have never really conducted a joint operation as envisioned in current doctrine manuals. In fact, contrary to exhortations to jointness from some quarters of the CF, the stated preference of the Canadian air force and navy is to operate in combina-tion with their American counterparts and not with the army or each other. Canadian participation in the Gulf War was typical of the Canadian armed services' historical propensity for serving as adjuncts to larger allied services but separate from the other Canadian services or environmental forces. As long as equipment, doctrinal, and single-service inter-operability concerns continue to drive the environments, particularly the navy and air force, to fight beside "the best" (i.e., the Americans) then the development of a truly Canadian joint expertise will be difficult. One important aspect improving Canadian joint capa-bilities will be the development of a joint culture in the CF.

Even though the importance of organizational culture is recognized in a number of DND documents and in the management literature, it has been largely overlooked in most of the change initiatives in the CF since 1964. Yet we know that the key factor in creating effective C2 arrangements is an organizational culture that promotes and rewards the values that are necessary for a C2 system to work. Today, most C2 systems in the Western world depend on subordinates to take the initiative and to have trust in their superiors. Unfortunately, as we have seen, in the CF and other Western armed forces there is a lack of trust between leaders and the led because many of those in the ranks below colonel have lost confidence in their superiors. The key factor

here appears to be an imbalance between the authority given to field commanders and the accountability expected of them. Over 25 years ago it was recognized that the new NDHQ structure had centralized authority but left accountability relatively decentralized. The imbalance between authority and accountability appears to be at the heart of the lack of trust in senior leaders and higher headquarters today.

One of the keys to re-establishing trust and confidence within the CF, and thereby creating the attitudes and abilities required to support the desired C2 arrangements, will be the modification of the organizational culture of DND. Too often in the past, change initiatives have transformed the things that could be changed – like processes and structures – while paying little attention to the so called "soft" parts of the organization, like its culture. Yet, as we have seen, changes in structures and processes will have little real effect if the people do not buy in to the changes or if they are incapable of working with the new structures and processes. History shows that whatever C2 structures armed forces have in place, they will not work the way they were designed to work, but it does not matter that they will not work as planned. What does matter is the capacity to get it right quickly when the moment arrives, to paraphrase Sir Michael Howard's comment on doctrine.[217] This has been demonstrated time and time again in the past, most recently for the CF in the Gulf War and in Operation Assurance.

Preparing people to work with the new structures and processes is one important step in change. Another crucial measure will be modifying the organizational culture of the CF, and this will be a long a long and difficult process. Cultural change is also an ongoing process that will need to be institutionalized in the CF if their culture is to be kept congruent with that desired by its leaders. In order to make organizational change a permanent feature of the CF, it will need to be accepted as necessary, but perhaps more importantly people in the CF will need the competencies to deal with the change brought about by the ambiguity

96

and uncertainty of the post-Cold War world. But developing these competencies will not be a matter of holding a few retreats or giving people two- or three-day courses. The skills and experience required to modify organizational culture in a complex organization like the CF will require professional development based on education, training, and experience throughout the careers of members of the CF. This will be a critical step to establishing a learning culture in the CF. While many have observed on the need for a "learning culture" in the CF, some of the essentials to creating a learning culture have not been fully exploited in DND. For example, colonel and general officer (DP 4) professional military education throughput is lagging far behind the requirement to provide formal DP 4 individual training and education, a decline in the number of colonels and general officers has eroded the "experience" pillar in the officer professional development system, and the imposition of management-based values on DND has sown confusion about the role of the profession of arms in the values and ethos of the CF.

Before these serious problems can be addressed in an effective manner, clearly articulated and widely accepted principles for effecting C2 in the CF are required. The first step in establishing a set of valid principles to guide change in C2 in the CF will be for the Canadian military to adopt a theory of C2 that is based on empirical evidence and that is culturally compatible with the CF. Two Canadian researchers, Ross Pigeau and Carol McCann at DCIEM, are working on a comprehensive evidence-based theory that could provide a solid foundation for command in the CF and which would be compatible with the organizational culture of the CF. The Pigeau-McCann model asserts the following key points: command is the creative expression of human will to accomplish the mission; command capability is defined by a combination of competency, authority and responsibility; effective command demands a balance between competency, authority and responsibility; control is those structures and processes devised by command to enable it and to

manage risk; control is a tool of command therefore it should support command competency, authority and responsibility; C2 is the establishment of common intent to achieve coordinated action; common intent is made up of shared explicit intent and operationally relevant shared implicit intent. This is a very promising theory upon which to base principles for the exercise of command and for developing effective C2 structures in the CF.

Until the CF adopt a comprehensive set of principles to guide the development of its C2 systems, any changes in C2 structures should retain the flexibility advocated by General Hansen. While centralization may appear more efficient to some, it deprives the CF of the single-service competencies that may be required at a moment's notice and the flexibility to deal with more than one crisis at a time that the current, rather untidy, system provides. This is not to suggest that the current system cannot be improved upon, but any future systems should preserve the flexibility vital to any successful military C2 model.

The history of C2 in the CF, particularly in the post-Cold War world is filled with complex, ambiguous, and sometimes dramatic change. More often though this history has been characterized by a constant evolution of CF C2 structures to meet changing circumstances. The future is likely to hold the same mix of ingredients. The CF will be required to meet unknown challenges in an unpredictable world. This means that those who command the CF and those who develop the C2 models to meet their needs will need valid principles to guide their actions. These principles are within our grasp, but they require decisions to bring them to fruition.

RECOMMENDATIONS

It is recommended that:

a. The Pigeau-McCann model of command and control be adopted as the theoretical base for C2 in the CF.

    Rationale: This model is one of the leading empirically-based models of C2 currently being developed. As a model being developed by Canadian researchers and using Canadian (as well other) data, it is compatible with the organizational culture of the CF, and it deals with the major challenges confronting Canadian decision makers.

b. The principles for developing C2 systems articulated in this report be evaluated using the Pigeau-McCann model of command and control and evidence from other disciplines such as military history, and adopted once their validity is confirmed.

    Rationale: This will be the first clear statement of evidence-based C2 principles in the CF; however, further research is required to ensure that the principles are valid.

c. Until valid principles for developing C2 principles have been adopted, any changes in CF C2 arrangements should leave the greatest possible flexibility for adaptation and change in the future.

    Rationale: Before the principles can be validated, changes in CF C2 arrangements will be required; however, these changes should not foreclose any future options.

d. The ethos and organizational culture of the CF be re-focussed on the profession of arms.

Rationale: The CF's use of management-oriented processes and tools over the past 35 years, some of which have proven ineffective even in the business profession, has sown confusion about the role of the profession of arms in the values and ethos of the CF and has made it very difficult to create an organizational culture in the CF based on military values.
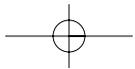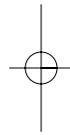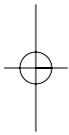
PART ONE   NOTES

1. H. Hansen "Foreword" in Thomas-Durell Young, ed. *Command in NATO After the Cold War: Alliance, National, and Multinational Considerations* (Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, 1997), ix.

2. Some idea of the size and diversity of the literature on command and related subjects can be seen in "Admiralship/Generalship: A Selected Bibliography by Subject" at *http://wps.cfc.dnd.ca/amscreadings/bibadmgen.html#command.*

3. "MCCRT 1995," cited in Lynn Gordon Mason and Raymond Crabbe, "A Centralized Operational Level Headquarters," unpublished paper written for DND (Dec 2000), 9. A recent DND report illustrates the problems of working without a set of comprehensive and generally accepted command principles. A number of references to various approaches and theories are made in the paper (e.g., pp 1, 2, 4, 5, 8, 10, 11, 14, 22, 27), but a complete lack of citations or references to the specific theories or approaches the author had in mind as an analytical base make it impossible to assess the validity of the report's conclusions. Scot Robertson, "Reviving the Defence Planning & Force Development Process," ORD Project Report PR9911 (Jul 1999).

4. Carol McCann and Ross Pigeau, "Clarifying the Concepts of *Control* and of *Command*," in *Proceedings of the 1999 Command and Control Research and Technology Symposium 29 June – 1 July, 1999* (Newport, R.I. : US Naval War College, 1999), 1-2.

5. Interview with RAdm (retired) Bruce Johnson, 30 May 2001. A detailed discussion of this issue is found in Douglas L. Bland, *Chiefs of Defence* (Toronto: Canadian Institute of Strategic Studies, 1995).

6. Martin van Creveld, Command in War (Cambridge, MA: Harvard University Press, 1985), 9, 262-3.

7. Van Creveld, 262, 274-5.

8. Douglas L. Bland, *Canada's National Defence*, Vol. 1 (Kingston, ON: Queen's University School of Policy Studies, 1997), viii.

PART TWO   NOTES

9. "Minister's Statement on the Estimates" (17 Jun 1947) cited in Bland, *Canada's National Defence*, Vol. 1, 16, 19.

10. Desmond Morton, *A Military History of Canada* (Edmonton: Hurtig Publishers, 1985), 227.

11. Bland, *Canada's National Defence*, Vol. 1, xiii.

12. Bland, *Canada's National Defence*, Vol. 1, 2, 4-6.

13. Bland, *Canada's National Defence*, Vol. 1, 57-9, 62.

14. Interview with LGen (retired) A.M. DeQuetteville, 18 May 2001.

15. Douglas Bland, *The Administration of Defence Policy in Canada 1947-1985* (Ottawa: Ronald P. Frye, 1987), 72; and Bland, Canada's National Defence, Vol. 1, 115-16.

16. M.A. Rostek, "Defence Management in the 1990s," unpublished paper, June 2000, 14-17; and Bland, 120-1.
17. J.I. Fenton, "Hail to the Chief: Strategic Command of the Canadian Forces," paper prepared for National Security Studies Course (NSSC) 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/fenton2.html*, 3. The word "command" has been added to the CDS's responsibilities on the DND website and in the 1997 "Authority, Responsibility and Accountability" Report to the Prime Minister without any apparent changes in the NDA.

18. Bland, *Canada's National Defence*, Vol. 1, 186, 261-2.

19. Rostek,17-19, 20.

20. Johnson interview, 30 May 2001.

21. Rostek, 20-1.

22. DeQuetteville interview, 18 May 2001.

23. Bland, *Canada's National Defence*, Vol. 1, 262-3.

24. Bland, *Canada's National Defence*, Vol. 1, xiv.

25. David Detomasi, "Re-engineering the Canadian Department of National Defence: Management and Command in the 1990s," *Defense Analysis* 12, no. 3, (1996), 337.

26. For example, the 1994 Defence White Paper states that " . . . National Defence will work with Industry Canada, as well as Public Works and Government Services Canada, towards harmonizing industrial and defence policies to maintain essential defence industrial capability." *1994 Defence White Paper*, *http://www.dnd.ca/admpol/pol_docs/94wp/seven.html #ManagementCommandAndControl*.

27. Allan D. English, "Putting the 'Professional' Back in Military Education," *Vanguard* issue 4 (1999), 10-12.

28. Detomasi, 333-4.

29. Detomasi, 329-30.

30. Micklethwait and Woolridge cited Rostek, 23. See also Jacques Plante, "Responding to Change in the Department of National Defence and the Canadian Forces," paper prepared for NSSC 1 (1999), *http://wps.cfc.dnd.ca/ papers/nssc1/plante2.html,*2.

31. DeQuetteville interview, 18 May 2001.

32. Cited in Detomasi, 332.

33. Detomasi, 333.

34. The material in this section is taken from "Origins of the MCCRT, MCCRT Historical Report" at *http://www.vcds.dnd.ca/dgsp/dsc/archives/ mccrt/bkgrnd_e.asp*

PART THREE   NOTES

35. DeQuetteville interview, 18 May 2001.

36. MGen G.E.C. Macdonald, "Foreword, MCCRT History," *http://www.vcds.dnd.ca/dgsp/dsc/archives/mccrt/foreword_e.asp*.

37. MGen L. Campbell, "Overview, MCCRT History," 20 June 1997. *http://www.vcds.dnd.ca/dgsp/dsc/archives/mccrt/foreword_e.asp*.

38. Mason and Crabbe, 10.

39. Bland, *The Administration of Defence Policy in Canada*, 15-17, 22.

40. G.C.E. Theriault, "Reflections on Canadian Defence Policy and its Underlying Structural Problems," *Canadian Defence Quarterly* 22, no. 6 (July 1993), 9.

41. Plante, "Responding to Change in the Department of National Defence and the Canadian Forces," 10.

42. Detomasi, 335, 338, 344.

43. Peter Kasurak, "Sorting Out the Essentials of Readiness: A Look at the Canadian Forces," *On Track* 6, no. 2, (May 2001), *http://www.cda-cdai.ca/english-frame.htm*.

44. Detomasi, 335, 340-4. See also DeQuetteville interview 18 May 2001.

45. Detomasi, 330.

46. A detailed account of this example can be found in Mark D. Mandeles et al., *Managing "Command and Control" in the Persian Gulf War* (Westport, CT: Praeger, 1996), especially 1-8.

47. J.I. Fenton, "Make Way for K-Man: Information Management Includes Knowledge Management," paper written for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/fenton1.html*, 11-12.

48. Mason and Crabbe, 20, 42, 48.

49. Chief Review Services (CRS), "NDHQ 99: Review of Restructuring and Re-engineering," Vol. 3, "Results in Brief," 7050-10 (CRS), May 1999, p. A-2/3.

50. CRS, "NDHQ 99," vol. 1, 8/15.

51. CRS, "NDHQ 99," vol. 3, B-1/3.

52. CRS, "NDHQ 99," vol. 3, E-7/14.

53. For a detailed analysis of serious weaknesses in the business planning process as used in DND today see Pierre Cadotte, "Le plan d'affaires et la

diversification des modes de prestation des services," paper written for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/cadotte2.html*.

54. CRS, "NDHQ 99," vol. 1, 8/15.

55. CRS, "NDHQ 99," vol. 3, F-2/4.

56. CRS, "NDHQ 99," vol. 3, A-2/3.

57. CRS, "NDHQ 99," vol. 3, E-3/14.

58. CRS, "NDHQ 99," vol. 1, 10/15.

59. DeQuetteville interview, 18 May 2001.

60. CRS, "NDHQ 99," vol.1, 11/15.

61. CRS, "NDHQ 99," vol. 3, G-4/5.

62. Mason and Crabbe, 1, 21.

63. Mason and Crabbe, 2, 10, 40, 51, 58.

64. Mason and Crabbe, 5-6.

65. Mason and Crabbe, 21-2, 28, 36; and J.Y. Forcier, "From Unification to Jointness: An Avoidable Road for the Canadian Forces," paper prepared for the National Defence Course (June 1994), 31-2.

66. Mason and Crabbe, 13, 16, 37-8, 40.

67. Bryn M. Weadon, "Canada's Joint Sustainment Co-ordination Capabilities," paper written for Advanced Military Studies Course (AMSC) 3, (Oct 2000), will be available electronically on CFC web site shortly.

68. Mason and Crabbe, 21.

69. "Shaping the Future of the Canadian Forces: A Strategy for 2020," (June 1999), *http://www.vcds.dnd.ca/cds/strategy2k/2020_e.doc*, 10.

70. Bruce W. Menning, "Operational Art's Origins," *Military Review* 77, no. 5 (September-October 1997), 33.

71. *Oxford English Dictionary* (1989), 849.

72. Executive Summary, "Adjusting Course: A Naval Strategy for Canada," *http://www.dnd.ca/navy/marcom/acexece.html*.

73. The US Army defines operational art as the "employment of military forces to attain strategic goals in a theatre of war or theatre of operations." Richard Swain, "Filling the Void: The Operational Art and the US Army," in B.J.C. McKercher and Michael A. Hennessy, eds., *The Operational Art: Developments in the Theories of War* (Westport, CT: Praeger, 1996), 165.

106

74. W. A. March, "Joint Doctrine Precis," Toronto: Canadian Forces College, 1998 (Exercise New Horizon) *http://www.cfcsc.dnd.ca/irc/nh/nh9798/0057.html*.

75. *Canadian Forces Operations*, B-GG-005-004/AF-000, (15 May 1997) *http://www.dnd.ca/dcds/drs/pubs/cfdocgl_e.htm*, p. 1-5.

76. K.T. Eddy, "*The Canadian Forces and the Operational Level of War,*" *Canadian Defence Quarterly* 5 (April 1992), 21; and. John A. English, "The Operational Art: Developments in the Theories of War," in B.J.C. McKercher and Michael A. Hennessy, eds., *The Operational Art: Developments in the Theories of War* (Westport, CT: Praeger, 1996), 20.

77. Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass, 1997), 2.

78. Menning, 32.

79. Edward N. Luttwak, "The Operational Level of War," *International Security* 5, no. 3 (Winter 1980/81), 61.

80. Naveh, 8.

81. Rebecca Grant, "Closing the Doctrine Gap," *Air Force Magazine* 80, no. 1 (January 1997), 49.

82. *Naval Warfare*, Naval Doctrine Publication 1, Norfolk: Naval Doctrine Command, 1994, p. i. Capt (N) (retired) Robert H. Thomas summarizes the naval approach to these issues in his excellent and comprehensive annotated bibliography "Maritime Doctrine at the Operational Level of War" which is available at *http://wps.cfc.dnd.ca/amscreadings/bibmaritime.html*.

83. Donn A. Starry, "A Perspective on American Military Thought," *Military Review* 69 (July 1989), 6-10.

84. Swain, 153-9. Quote from Naveh, 25.

85. Swain, 162-3, 165-6.

86. Naveh, xviii-xix; and Swain, 164 166.

87. John A. English, "The Operational Art: Developments in the Theories of War,"19; and John A. English, *Marching Through Chaos: The Descent of Armies in Theory and Practice* (Westport, CT: Praeger, 1996), 167-8. See also Paul Johnston, "The Myth of Manoeuvre Warfare," in Allan D. English, ed., *The Changing Face of War* (Montréal & Kingston: McGill-Queen's Univ. Press, 1998), 22-32.

88. Robert Alan Fry, "The Meaning of Manoeuvre," *JRUSI* 143, no. 6 (Dec 1998), 41-4.

89. Raymond W. Leonard, "Learning from History: Linebacker II and US Air Force Doctrine," *Journal of Military History* 58 (April 1994), 267-303.

90. Andrew G.B. Vallance, *The Air Weapon: Doctrines of Air Power Strategy and Operational Art* (London: Macmillan, 1996), 91.

91. John A. English, *Marching Through Chaos*, 167.

92. John A. English, "The Operational Art: Developments in the Theories of War," 20.

93. "Introduction," in B.D. Hunt and R.G. Haycock, eds., *Canada's Defence* (Toronto: Copp Clark Pitman, 1993), 1-3. An insightful analysis of this issue in the post-Cold War context is in Theriault, "Reflections on Canadian Defence Policy and its Underlying Structural Problems," 3-10.

94. Michael A. Hennessy, "Operation 'Assurance': Planning a Multi-National Force for Rwanda/Zaire," *Canadian Military Journal* 2, no. 1 (Spring 2001), 18-19.

95. Martin Dunn, "Levels of War: Just a Set of Labels?" *Research and Analysis* no.10 (October 1996), 2, 4.

96. John A. English, "The Operational Art: Developments in the Theories of War," 20.

97. John A. English, "The Operational Art: Developments in the Theories of War," 17.

98. Douglas A. MacGregor, "Future Battle: The Merging Levels of War," *Parameters* 22, no. 4 (Winter 1992-93), 41-2.

99. Steven Metz, "Operational Level of Nuclear War Fighting: Missing or Unnecessary?" *Airpower Journal* 7, no. 1 (Spring 1993), 19.

100. John A. English, "The Operational Art: Developments in the Theories of War," 20.

101. Hansen, ix-x.

102. Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: Johns Hopkins Univ. Press, 1989), 3, 39.

103. See for example, Walter F. Ulmer, Jr., et al. *American Military Culture in the Twenty-First Century* (Washington, DC: CSIS Press, 2000), 13.

104. *Naval Warfare*, Naval Doctrine Publication 1, Norfolk: Naval Doctrine Command, 1994, p. i. See also Thomas, "Maritime Doctrine at the Operational Level of War."

105. Grant, 49.

106. See for example "Operational Maneuver from the Sea," insert to *Marine Corps Gazette* (July 1996), A-2.

107. James A. Mowbray, "Air Force Doctrine Problems 1926-Present," *Airpower Journal*. 9, no. 4 (Winter 1995), 21-41.

108. The only published analysis of current Canadian aerospace doctrine is in Brian D. Wheeler, et al. "Aerospace Doctrine," in David Rudd, et al., eds., *Air Power at the Turn of the Millennium* (Toronto: Canadian Institute of Strategic Studies, 1999), 141-77. Among other things, it recommends that operational-level doctrine manuals, abandoned with the disbanding of the Air Groups, need to be revived (p. 164).

109. Mason and Crabbe, 19.

110. "Joint" is defined as activities, operations, organizations, etc. in which elements of more than one service of the same nation participate. "Combined" in this context means activities, operations, organizations, etc between two or more forces or agencies of two or more allies. "Glossary," *Canadian Forces Operations*, B-GG-005-004/AF-000.

111. "Shaping the Future of the Canadian Forces: A Strategy for 2020," 4, 8, 10.

112. Don M. Snider, "An Uninformed Debate on Military Culture," *Orbis* 43, no. 1 (Winter 1999), 15, 19.

113. Swain, 148-66, gives an excellent summary of the process of the development of the concept of the operational art in the US Army.

114. See Paul K. Van Riper and Robert H. Scales Jr., "Preparing for War in the 21st Century," *Parameters* 27 (Autumn 1997), 4–14, for a summary of the US Army and Marine Corps focus on surface warfare and the concept of air power as a battlefield support function.

115. Elinor C. Sloan, "The United States and the Revolution in Military Affairs," Directorate of Strategic Analysis, DND, Ottawa, Project Report No. 9801, February 1998, 11-16. See also J.J. Morneau, "US Joint Doctrine: Services Influence and 'Disjointness,'" paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/027.html*.

116. F.M. Boomer, " Joint or Combined Doctrine?: the Right Choice for Canada," paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/001.html*, np.

117. Harvey M. Sapolsky, "Interservice Competition: The Solution, Not the Problem," *Joint Force Quarterly* (Spring 1997), 51.

118. Builder, *The Masks of War*, 3.

119. Sapolsky, 51-3.

120. See, for example, Snider, 15, 20.

121. General A.C. Zinni, "Verbatim," *The Washington Post Online*, 16 Jul 2000, p. B02.

122. For an overview of this question and current problems see Douglas Bland, "The Government of Canada and the Armed Forces: A Troubled Relationship," in David A. Charters and J. Brent Wilson, eds. *The Soldier and the Canadian State: A Crisis in Civil-Military Relations?* Fredericton, NB: Centre for Conflict Studies, 1996, 27-45.

123. J.S. Dewar, "The Impact of the Evolution of the Operational Level of War on the Structure of the Canadian Forces: a Sailor's Perspective," paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/007.html, np*.

124. DeQuetteville interview, 18 May 20001; and Forcier, "From Unification to Jointness," 15-16, 20-1.

125. Adrian Preston, "The Profession of Arms in Postwar Canada, 1945-1970," *World Politics* 23 (January 1971), 203.

126. Granatstein, "The American Influence on the Canadian Military," in Hunt and Haycock, 134-5; and Boomer, np.

127. Johnson interview, 30 May 2001.

128. Dewar, np.

129. W. Semianiw, "Western Operational Theory: Breaking the Industrial Paradigm," paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/037.html*, np.

130. See for example K.T. Eddy, "The Canadian Forces and the Operational Level of War," *Canadian Defence Quarterly* 5 (April 1992), 18-24.

131. Dewar, np.

132. Boomer, np; and DeQuetteville interview, 18 May 2001.

133. Dewar, np.

134. Dewar, np.

135. D. MacGillivary et al., "Inter-Service Cooperation: Is it the Essence of Joint Doctrine?" in David Rudd, et al., eds., *Air Power at the Turn of the Millennium* (Toronto: Canadian Institute of Strategic Studies, 1999), 192-3.

136. Boomer, np.

137. Desmond Morton, "Morton Report: What to tell the Minister," *http://www.dnd.ca/eng/min/reports/Morton/MORTONe.htm#toc*, np.

138. Much of the material taken from this section comes from Allan D. English, "Understanding Military Culture: A Canadian Perspective," Defence and Civil Institute of Environmental Medicine Contract Report No. CR 2001-047, 10 May 2001.

139. Lawrence J. Korb, "The Military and Social Change," John M. Olin Institute for Strategic Studies Project on U.S. Post Cold-War Civil-Military Relations, Harvard Univ. (August 1996), *http://hdc-www.harvard.edu/cfia/olin/civmil.htm*, np .

140. "Shaping the Future of the Canadian Forces: A Strategy for 2020," 1-2.

141. C.A. Cotton, "A Canadian Military Ethos," *Canadian Defence Quarterly* 12, no. 3 (Winter 1982/83), 13, 15.

142. See for example D.C. Loomis and D.T. Lightburn, "Taking into Account the Distinctness of the Military from the Mainstream of Society," *Canadian Defence Quarterly* 10, no. 2 (Autumn 1980), 19-20; and Alain Pellerin, "Demilitarization of the Canadian Forces," letter to the editor *The National Post* (22 November 1999), *http://www.cda-cdai.ca/medialetters/demilcf.htm*.

143. Albert Legault, "Report to the Minister, Part 2: Canadian Society and the Canadian Armed Forces." *http://www.dnd.ca/eng/min/reports/Legault/Legault_two_e.htm*., np.

144. Douglas L. Bland, "Canada's Officer Corps: New Times, New Ideas," Conference of Defence Associations Institute XVth Annual Seminar, 1999 - The Profession of Arms in Canada: Past. Present and Future. *http://www.cda-cdai.ca/english-frame.htm*, np.

145. Cotton, "A Canadian Military Ethos," 10.

146. See for example, DND, "Review Group on the Report of the Task Force on Unification of the Canadian Forces" Vance Report (Ottawa: DND, 1980); and. Directorate of Personnel Development Studies, "Officer Corps Study -

Phase One Report - Development of a Framework of Principles," (Ottawa: DND, 1989).

147. "Ethos and Values in the Canadian Forces." (1997) *http://www.dnd.ca/eng/min/reports/ethos/ethmar19.htm*.

148. Robert Near, "Diving the Message: An Analysis of the MND and Somalia Commission Reports," in Bernd Horn, ed., *Contemporary Issues in Officership*, 66, 79, 86n37, 90-1n81.

149. Near, 65, 67-8, 72-3, 76-7, 83n22, 89n67, 90n74.

150. CRS, "NDHQ 99," vol. 1, 10/15.

151. Excerpts from draft copy of "Decade of Turmoil: Debrief the Leaders" prepared by the Special Advisor to the Chief of the Defence Staff (Professional Development). A very abbreviated version of these comments appeared in the final version - *The Debrief the Leaders Project (Officers)* (May 2001) *http://www.dnd.ca/hr/pd/pdf/DebriefLeaders_e.PDF*, 7-8.

152. For an overview of these issues see Allan D. English, "The Americanization of the Canadian Officer Corps: Myth and Reality?" in Bernd Horn, ed. *Contemporary Issues in Officership: A Canadian Perspective* (Toronto: Canadian Institute of Strategic Studies, 2000), 181-204.

153. "Ethics and Operations Project Report" (9 March 2000), *http://www.dnd.ca/ETHICS/documents/ethops_e.doc*; and "First Baseline Survey on Ethical Values in the Department of National Defence" Phase I (1999) and Phase II (July 2000) Reports available on the DND ethics intranet site at *http://ethics.mil.ca*.

154. S. B. Flemming, "The Hearts and Minds of Soldiers in Canada: The Military Ethos Scale (MES) in Retrospect," DSEA Staff Note 89/01, Ottawa: Operational Research and Analysis Establishment, Directorate of Social and Economic Analysis (1989) summarizes and critiques Cotton's studies. The original study is C.A. Cotton, "Military Attitudes and Values of the Army in Canada," CFPARU Report 79-5. Willowdale, ON: CF Personnel Applied Research Unit, 1979. Testimony and studies reflecting these themes can be found in testimony and studies on the Board of Inquiry web site at *http://www.dnd.ca/boi/engraph/home_e.asp*.

155. *Organization and Accountability: Guidance for Members of the Canadian Forces and Employees of the Department of National Defence*, Second Edition, Sep 1999, *http://www.dnd.ca/inside/ins_orgacc_e.htm*.

156. Lieutenant-Colonel W. Wild, "Army Culture," 1080-1-6004 (DLP3-4), unpublished paper dated July 1997, available at CFC Library, 1, 3, 5, 6-8.

157. Wild, 4, 10.

158. David Bercuson, *Significant Incident: Canada's Army, the Airborne, and the Murder in Somalia* (Toronto: McClelland and Stewart, 1996), 103-5, 112, 114.

159. Allan D. English, "Leadership and Operational Stress in the Canadian Forces," *Canadian Military Journal* 1, no. 3 (Autumn 2000), 36-7.

160. Wild, 8-10, 18.

161. See J. Soeters and R. Recht, "Culture and Discipline in Military Academies: An International Comparison," *Journal of Political and Military Sociology* 26, no. 2 (Winter 1998).

162. Charles B. Breslin, "Organizational Culture and the Military," Carlisle Barracks, PA: US Army War College, 2000, 1, 16.

163. Richard Gabriel and Paul Savage, *Crisis in Command: Mismanagement in the Army* (New York, NY: Hill and Wang, 1978), 86-8.

164. John Marlin, "Cynicism and Careerism; Threats to Army Ethics," Army 47, no. 5 (May 1997), 8.

165. Ulmer, *American Military Culture*, xxi-ii, xv, 36-7.

166. R.R. Romses, "The Social Contract and the Canadian Forces: Has Canadian Defence Leadership Broken Faith?" paper written for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/romses2.html*, 10-11, summarizes some of the findings of Canadian studies of these issues.

167. Colonel J.E. Neelin and Colonel L.M. Pederson, "The Administrative Structure of the Canadian Armed Forces: Over-Centralized, Overly Staff-Ridden," *Canadian Forces Quarterly* 20, Special no. 2 (August 1990) [originally published in vol 4., no. 2 (Autumn 1974)], 40, 43, 44.
168. CRS, "NDHQ 99," vol. 3, B-2/3.

169. CRS, "NDHQ 99," vol. 3, E-12/14.

170. A detailed analysis of this problem may be found in allan English, Angus Brown and Paul Johnston, "Are We Losing Our Memory?: Decision Making in DND," paper presented at the Canadian Military History Conference, Ottawa, ON, 5-9 May 2000. Copy available from allan English.

171. Greg Jaffe, "Pentagon Cracks Down on...PowerPoint," *Wall Street Journal*, online edition, (26 Apr 2000).

172. William M. Arkin, "How Sausage is Made," *Washington Post*, online edition, (17 Jul 2000).

PART FOUR   NOTES

173. See for example the MCCRT report, cited in Mason and Crabbe, 9.

174. The "Overview" section of Part 4 is based on a paper titled "Contemporary Issues in Command and Control" by Allan English which was prepared for the DCDS Retreat, 6-8 Feb 2001, Kingston, ON.

175. A detailed account of this example can be found in Mandeles et al., Managing "Command and Control" in the Persian Gulf War.

176. Timothy L. Thomas, "Kosovo and the Current Myth of Information Superiority," 13-29.

177. Mackubin Thomas Owens, "Technology, the RMA, and Future War," *Strategic Review* 26, no. 2 (Spring 1998), 69.

178. Rear Admiral W.J. Holland Jr., "Where Will All the Admirals Go?" *US Naval Institute Proceedings* 125, no. 5 (May 1999), 36-40.

179. William K. Lescher, "Network-Centric: Is It Worth the Risk?" *US Naval Institute Proceedings* 125, no. 7 (July 1999), 58-63.

180. Thomas J. Czerwinski, "Command and Control at the Crossroads," *Parameters* 26, no. 3 (Autumn 1996), 121-32.

181. Michael Geyer, "German Strategy in the Age of Machine Warfare, 1914-45" in Peter Paret, ed. *Makers of Modern Strategy*, 582, 585-8.

182. Naveh, 121.

183. Naveh, 128; and Geyer, 586.

184. Mandeles, 6.

185. Lescher, 60.

186. See for example Bell, "The Impact of Policies on Organizational Values and Culture,"; Paul Johnston, "Doctrine is not Enough: The Effect of Doctrine on the Behavior of Armies"; and Ulmer, *American Military Culture*.

187. Gary Garnett, "The Canadian Forces and the Revolution in Military Affairs: A Time for Change," *Canadian Military Journal* 2, no. 1 (Spring 2001), 5-10.

188. "*Mutabilis in Mobili*: Leading and Managing Strategic Change in DND and the CF."

189. This section is based on Carol McCann and Ross Pigeau, "A Conceptual Framework for Discussing Command and Control," a paper prepared for the DCDS Retreat, 6-8 Feb 2001, Kingston, ON. Portions of this material have also been published in B. Horn and S.J. Harris, eds., *Generalship and the Art of the Admiral* (St. Catherines, ON: Vanwell, 2001).

190. G. D. Foster, "Contemporary C2 Theory and Research: The Failed Quest for a Philosophy of Command," *Defense Analysis* 4, no. 3, (1988), 213.

191. Whether the envelop is actually linear, as shown here, or some type of curve, is an empirical question that research can answer.

192. *Organization and Accountability*, Second Edition, Sep 1999.

193. See Gunther Rothenberg, "Moltke, Schlieffen, and the Doctrine of Strategic Envelopment," in Peter Paret, ed., *Makers of Modern Strategy* (Princeton: Princeton Univ. Press, 1986), 296, for the origins of *Auftragstaktik*.

194. For example the policy directive on Business Class Travel issued in May 2001 went into excruciating detail about the criteria under which supervisors could approve this type of travel allowing them virtually no latitude for decision making. "Business Class Travel" Unclas message DCBA 3 001/01 080938Z May 01.

195. Steven Edwards, "Canadian gun crews banned from dismantling weapons," *National Post* (16 May 2001) *http://www.NationalPost.com/news/world/story.html?f=/stories/20010516/564446.html*.

196. CRS, "NDHQ 99," vol. 1, "Executive Overview," 9.

197. For a detailed discussion of this issue see Allan D. English, "Understanding Military Culture."

198. Bell, "The Impact of Policies on Organizational Values and Culture" and Allan D. English, "Understanding Military Culture."

199. CRS, "NDHQ 1999," vol. 1, 9/15.

200. Dequetteville interview, 18 May 2001.

201. M.J. Dumais, "A Case for a Balanced Approach to Future Operational-Level Command and Control Systems," paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/010.html, 11*.

202. Hansen, ix-x.

203. Michael A. Hennessy, "Operation 'Assurance': Planning a Multi-National Force for Rwanda/Zaire," *Canadian Military Journal* 2, no. 1 (Spring 2001), 16-17.

204. L.D. Holder, "Educating and Training for Theatre Warfare." *Military Review* 70, no. 9 (September 1990) 85-99; and Naveh, 11, 307.

205. John Kiszely, "The Meaning of Manoeuvre," *RUSI Journal* 143, no. 6 (Dec 1998), 39.

206. Mason and Crabbe, 20, 42, 48.

207. These issues and other systemic problems in Canadian senior officer IT&E are discussed in detail in "Report of the DP 3 Options Study Group," dated 20 Jun 2001. A copy of this report is available from the COS, CFC, Toronto.

208. The concept of culture as the "bedrock of military effectiveness," was recently articulated in Ulmer, *American Military Culture*, xv. This issue is discussed in detail in a Canadian context in Allan D. English, "Understanding Military Culture."

209. CRS, "NDHQ 99," vol. 1, 10/15.

210. Debra L. Nelson and James Campbell Quick, *Organizational Behavior: Foundations, Realities, and Challenges* (Cincinnati: South-Western College Publishing, 1999), 542-4.

211. Bell, 6, 7, 11, 15 n 20, 16 n 30.

212. Nelson and Quick, 540-1.

213. The ideas in this section are described in more detail in Allan D. English, "Understanding Military Culture."

214. Hansen, x.

215. Walter F Ulmer, "Military Leadership into the 21st century: Another 'Bridge too Far?'" *Parameters* 28, no. 1 (Spring 1998), 4-25.

PART FIVE   NOTES

222 "Shaping the Future of the Canadian Forces: A Strategy for 2020," 10.

223 Sir Michael Howard, "Military Science in the Age of Peace," *JRUSI* (March 1974), 3-4.
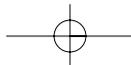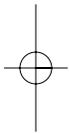
LIST OF REFERENCES

INTERVIEWS

LGen (retired) A.M. Dequetteville, 18 May 2001.

RAdm (retired) Bruce Johnson, 30 May 2001.

OFFICIAL DOCUMENTS

1994 Defence White Paper
http://www.dnd.ca/admpol/pol_docs/94wp/seven.html#ManagementCom
-mandAndControl

"Adjusting Course: A Naval Strategy for Canada."
http://www.dnd.ca/navy/marcom/acexece.html.

Board of Inquiry web site at
http://www.dnd.ca/boi/engraph/home_e.asp.

Canadian Forces Operations, B-GG-005-004/AF-000,
http://www.dnd.ca/dcds/drs/pubs/cfdocgl_e.htm.

The Debrief the Leaders Project (Officers) (May 2001) Ottawa: DND,
Special Assistant to the CDS on Professional Development,
http://www.dnd.ca/hr/pd/pdf/DebriefLeaders_e.PDF.

Defence Plan 2001: The Department of National Defence and
Canadian Forces Internal Annual Business Plan for Fiscal Year
2001/2002.
Dated 19 Apr 2001.

Organization and Accountability: Guidance for Members of the
Canadian Forces and Employees of the Department of National
Defence, Second Edition, Sep 1999,
http://www.dnd.ca/inside/ins_orgacc_e.htm.

"Shaping the Future of the Canadian Forces: A Strategy for 2020,"
June 1999, *http://www.vcds.dnd.ca/cds/strategy2k/2020_e.doc.*

D N D   R E P O R T S

Chief Review Services (CRS), "NDHQ 99: Review of Restructuring and Re-engineering," Vol. 1, "Executive Overview," and Vol. 3, "Results in Brief," 7050-10 (CRS), May 1999.

Cotton, C.A. "Military Attitudes and Values of the Army in Canada." CFPARU Report 79-5. Willowdale, ON: CF Personnel Applied Research Unit, 1979.

Directorate of Personnel Development Studies, "Officer Corps Study - Phase One Report - Development of a Framework of Principles." Ottawa: DND, 1989.

"Ethics and Operations Project Report," 9 March 2000. *http://www.dnd.ca/ETHICS/documents/ethops_e.doc.*

"Ethos and Values in the Canadian Forces," 1997. *http://www.dnd.ca/eng/min/reports/ethos/ethmar19.htm.*

"First Baseline Survey on Ethical Values in the Department of National Defence" Phase I (1999) and Phase II (July 2000). Reports available on the DND ethics intranet site at http://ethics.mil.ca.

Flemming, S. B. "The Hearts and Minds of Soldiers in Canada: The Military Ethos Scale (MES) in Retrospect." DSEA Staff Note 89/01, Ottawa: Operational Research and Analysis Establishment, Directorate of Social and Economic Analysis, 1989.

Mason, Lynn Gordon and Raymond Crabbe. "A Centralized Operational Level Headquarters." Unpublished paper written for DND, December 2000.

"MCCRT Historical Report." *http://www.vcds.dnd.ca/dgsp/dsc/archives/mccrt/bkgrnd_e.asp.*

"*Mutabilis in Mobili*: Leading and Managing Strategic Change in DND and the CF." Draft dated 29 Feb 2000. Available at *http://dgpa-dgap.mil.ca/dgpa/execnet/vcds/mutabilis_in_mobili.htm*.

Organization and Accountability: Guidance for Members of the Canadian Forces and Employees of the Department of National Defence, Second Edition, September 1999. *http://www.dnd.ca/inside/ins_orgacc_e.htm*.

"Report of the DP 3 Options Study Group." Dated 20 Jun 2001. A copy of this report is available from the COS, CFC, Toronto.

"Review Group on the Report of the Task Force on Unification of the Canadian Forces" Vance Report. Ottawa: DND, 1980.

Robertson, Scot. "Reviving the Defence Planning & Force Development Process." ORD Project Report PR9911 (Jul 1999), Ottawa: DND, Operational Research Division.

Wild, W. "Army Culture." 1080-1-6004 (DLP3-4). Unpublished paper dated July 1997, available at CFC Library

BOOKS, JOURNAL ARTICLES, PAPERS, ETC.

Arkin, William M. "How Sausage is Made." *Washington Post*, online edition, 17 July 2000.

Bell, William F. "The Impact of Policies on Organizational Values and Culture." Paper presented at the Joint Services Conference on Professional Ethics (January 1999) *http://www.usafa.af.mil/jscope/JSCOPE99/Bell99.html*.

Bercuson, David. *Significant Incident: Canada's Army, the Airborne, and the Murder in Somalia*. Toronto: McClelland & Stewart, 1996.

Bland, Douglas. *The Administration of Defence Policy in Canada 1947-1985*. Ottawa: Ronald P. Frye, 1987.

120

—————. *Canada's National Defence*, Vol. 1. Kingston, ON: Queen's University School of Policy Studies, 1997.

—————. "Canada's Officer Corps: New Times, New Ideas." Paper presented at Conference of Defence Associations Institute XVth Annual Seminar, 1999 - The Profession of Arms in Canada: Past. Present and Future http://www.cda-cdai.ca/english-frame.htm .

—————. *Chiefs of Defence*. Toronto: Canadian Institute of Strategic Studies, 1995.

—————. "The Government of Canada and the Armed Forces: A Troubled Relationship." In David A. Charters and J. Brent Wilson, eds. *The Soldier and the Canadian State: A Crisis in Civil-Military Relations?* Fredericton, NB: Centre for Conflict Studies, 1996, 27-45.

Boomer, F.M. " Joint or Combined Doctrine?: the Right Choice for Canada." Paper prepared for Advanced Military Studies Course (AMSC) 1, 1998. Copy in Information Resource Centre, Canadian Forces College, Toronto.

Breslin, Charles B. "Organizational Culture and the Military," Carlisle Barracks, PA: US Army War College, 2000.

Builder, Carl H. *The Masks of War: American Military Styles in Strategy and Analysis*. Baltimore: Johns Hopkins Univ. Press, 1989.

Builder, Carl H., et al. *Command Concepts*. Santa Monica, CA: RAND, 1999.

Cadotte, Pierre. "Le plan d'affaires et la diversification des modes de prestation des services." Paper written for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/cadotte2.html*.

Cotton, C.A. "A Canadian Military Ethos." *Canadian Defence Quarterly* 12, no. 3 (Winter 1982/83), 10-18.

Czerwinski, Thomas J. "Command and Control at the Crossroads." *Parameters* 26, no. 3 (Autumn 1996), 121-32.

Detomasi, David. "Re-engineering the Canadian Department of National Defence: Management and Command in the 1990s." *Defense Analysis* 12, no. 3, 1996, 327-46.

Dewar, J.S. "The Impact of the Evolution of the Operational Level of War on the Structure of the Canadian Forces: a Sailor's Perspective." Paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/007.html*.

Dumais, M.J."A Case for a Balanced Approach to Future Operational-Level Command and Control Systems." Paper prepared for AMSC 1, *http://wps.cfc.dnd.ca/irc/amsc/amsc1/010.html*.

Dunn, Martin. "Levels of War: Just a Set of Labels?" *Research and Analysis* no.10 (October 1996).

Eddy, K.T. "The Canadian Forces and the Operational Level of War." *Canadian Defence Quarterly* 5 (April 1992), 18-24.

Edwards, Steven "Canadian Gun Crews Banned from Dismantling Weapons." *National Post* (16 May 2001) *http://www.NationalPost.com/news/world/story.html?f=/stories/20010516/564446.htm*l.

English, Allan D. "The Americanization of the Canadian Officer Corps: Myth and Reality?" In Bernd Horn, ed. *Contemporary Issues in Officership: A Canadian Perspective*. Toronto: Canadian Institute of Strategic Studies, 2000, 181-204.

——————. "Leadership and Operational Stress in the Canadian Forces." *Canadian Military Journal* 1, no. 3 (Autumn 2000), 33-8.

——————. "Putting the 'Professional' Back in Military Education." *Vanguard* issue 4 (1999), 10-12.

122

—————-. "Understanding Military Culture: A Canadian Perspective," Defence and Civil Institute of Environmental Medicine Contract Report No. CR 2001-047, 10 May 2001.

English, Allan; Angus Brown and Paul Johnston. "Are We Losing Our Memory?: Decision Making in DND." Paper presented at the Canadian Military History Conference, Ottawa, ON, 5-9 May 2000. Copy available from Allan English.

English, John A. *Marching Through Chaos: The Descent of Armies in Theory and Practice*. Westport, CT: Praeger, 1996.

Fenton, J.I. "Hail to the Chief: Strategic Command of the Canadian Forces." Paper prepared for National Security Studies Course (NSSC) 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/fenton2.html*.

—————. "Make Way for K-Man: Information Management Includes Knowledge Management." Paper written for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/fenton1.html*.

Forcier, J.Y. "From Unification to Jointness: An Avoidable Road for the Canadian Forces." Paper prepared for the National Defence Course (June 1994).

Foster, G. D. "Contemporary C2 Theory and Research: The Failed Quest for a Philosophy of Command. *Defense Analysis* 4, no. 3 (1988).

Fry, Robert Alan. "The Meaning of Manoeuvre." *JRUSI* 143, no 6 (Dec 1998), 41-4.

Gabriel, Richard and Paul Savage. *Crisis in Command: Mismanagement in the Army*. New York, NY: Hill and Wang, 1978.

Garnett, Gary. "The Canadian Forces and the Revolution in Military Affairs: A Time for Change." *Canadian Military Journal* 2, no. 1 (Spring 2001), 5-10.

Geyer, Michael. "German Strategy in the Age of Machine Warfare, 1914-45." In Peter Paret, ed. *Makers of Modern Strategy*. Princeton: Princeton Univ. Press, 1986, 527-97.

Granatstein, J.L. "The American Influence on the Canadian Military." In B.D. Hunt and R.G. Haycock, eds. *Canada's Defence*. Toronto: Copp Clark Pitman, 1993, 129-39.

Grant, Rebecca. "Closing the Doctrine Gap." *Air Force Magazine* 80, no. 1 (January 1997), 48-52.

Hennessy, Michael A. "Operation 'Assurance': Planning a Multi-National Force for Rwanda/Zaire." *Canadian Military Journal* 2, no. 1 (Spring 2001), 11-20.

Holder, L.D. "Educating and Training for Theatre Warfare." *Military Review* 70, no. 9 (September 1990) 85-99.

Holland, Rear Admiral W.J., Jr. "Where Will All the Admirals Go?" *US Naval Institute Proceedings* 125, no. 5 (May 1999), 36-40.

Hunt, B.D., and R.G. Haycock, eds. *Canada's Defence*. Toronto: Copp Clark Pitman, 1993.

Jaffe, Greg. "Pentagon Cracks Down on . . . PowerPoint." *Wall Street Journal*, online edition, 26 Apr 2000.

Johnston, Paul. "Doctrine Is Not Enough: The Effect of Doctrine on the Behavior of Armies." *Parameters* 30, no. 3 (Autumn 2000), 30-9.

——————. "The Myth of Manoeuvre Warfare." In Allan D. English, ed. *The Changing Face of War: Learning from History*. Montreal & Kingston: McGill-Queen's Univ. Press, 1998, 22-32.

Kasurak, Peter. "Sorting Out the Essentials of Readiness: A Look at the Canadian Forces." *On Track* 6, no. 2 (May 2001), *http://www.cda-cdai.ca/english-frame.htm*.

Kiszely, John. "The Meaning of Manoeuvre." *RUSI Journal* 143, no. 6 (Dec 1998), 36-40.

Korb, Lawrence J. "The Military and Social Change." John M. Olin Institute for Strategic Studies Project on U.S. Post Cold-War Civil-Military Relations, Harvard Univ. (August 1996), *http://hdc-www.har-vard.edu/cfia/olin/civmil.htm*

Legault, Albert. "Report to the Minister, Part 2: Canadian Society and the Canadian Armed Forces." *http://www.dnd.ca/eng/min/reports/Legault/Legault_two_e.htm.*

Leonard, Raymond W."Learning from History: Linebacker II and US Air Force Doctrine." *Journal of Military History* 58 (April 1994), 267-303.

Lescher, William K. "Network-Centric: Is It Worth the Risk?" *US Naval Institute Proceedings* 125, no. 7 (July 1999), 58-63.

Loomis, D.C. and D.T. Lightburn. "Taking into Account the Distinctness of the Military from the Mainstream of Society." *Canadian Defence Quarterly* 10, no. 2 (Autumn 1980), 16-21.

Luttwak, Edward N. "The Operational Level of War." *International Security* 5, no. 3 (Winter 1980/81), 61-79.

McCann, Carol and Ross Pigeau. "Clarifying the Concepts of Control and of Command." In *Proceedings of the 1999 Command and Control Research and Technology Symposium 29 June – 1 July, 1999*. Newport, R.I. : US Naval War College, 1999.

MacGillivary, D. et al. "Inter-Service Cooperation: Is it the Essence of Joint Doctrine?" In David Rudd, et al., eds. *Air Power at the Turn of the Millennium*. Toronto: Canadian Institute of Strategic Studies, 1999, 192-3.

MacGregor, Douglas A. "Future Battle: The Merging Levels of War." *Parameters* 22, no. 4 (Winter 1992-93), 33-47.

McKercher, B.J.C. and Michael A. Hennessy, eds. *The Operational Art: Developments in the Theories of War*. Westport, CT: Praeger, 1996.

Mandeles, Mark D., et al. *Managing "Command and Control" in the Persian Gulf War*. Westport, CT: Praeger, 1996.

March, W. A., "Joint Doctrine Precis," Toronto: Canadian Forces College, 1998 (Exercise New Horizon) *http://www.cfcsc.dnd.ca/irc/nh/nh9798/0057.html*.

Marlin, John. "Cynicism and Careerism; Threats to Army Ethics." *Army* 47 no. 5 (May 1997), 7-10.

Menning, Bruce W. "Operational Art's Origins." *Military Review* 77, no. 5 (September-October 1997), 32-47.

Metz, Steven. "Operational Level of Nuclear War Fighting: Missing or unnecessary?" *Airpower Journa*l 7, no. 1 (Spring 1993), 13-20.

Micklethwait, John and Adrian Woolridge. *The Witch Doctors: Making Sense of the Management Gurus*. New York: Random House, 1997.

Morneau, J.J. "US Joint Doctrine: Services Influence and 'Disjointness.'" Paper prepared for AMSC 1, 1998. Copy in Information Resource Centre, Canadian Forces College, Toronto.

Morton, Desmond. *A Military History of Canada*. Edmonton: Hurtig Publishers, 1985.

—————. "Morton Report: What to tell the Minister." *http://www.dnd.ca/eng/min/reports/Morton/MORTONe.htm#toc*.

Mowbray, James A. "Air Force Doctrine Problems 1926-Present." *Airpower Journal* 9, no. 4 (Winter 1995), 21-41.

Naveh, Shimon. *In Pursuit of Military Excellence: The Evolution of Operational Theory*. London: Frank Cass, 1997.

Near, Robert. "Diving the Message: An Analysis of the MND and Somalia Commission Reports." In Bernd Horn, ed. *Contemporary Issues in Officership: A Canadian Perspective*. Toronto: Canadian Institute for Strategic Studies, 2000, 65-92.

Neelin, Colonel J.E. and Colonel L.M. Pederson. "The Administrative Structure of the Canadian Armed Forces: Over-Centralized, Overly Staff-Ridden." *Canadian Defence Quarterly* 20, Special no. 2 (August 1990), 39-44 originally published in vol 4., no. 2 (Autumn 1974).

Nelson, Debra L. and James Campbell Quick. *Organizational Behavior: Foundations, Realities, and Challenges*. Cincinnati: South-Western College Publishing, 1999.

Owens, Mackubin Thomas. "Technology, the RMA, and Future War," *Strategic Review* 26, no. 2 (Spring 1998), 63-70.

Plante, Jacques. "Responding to Change in the Department of National Defence and the Canadian Forces." Paper prepared for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/plante2.html*.

Preston, Adrian. "The Profession of Arms in Postwar Canada, 1945-1970." *World Politics* 23 (January 1971), 189-214.

Romses, R.R. "The Social Contract and the Canadian Forces: Has Canadian Defence Leadership Broken Faith?" paper written for NSSC 1 (1999), *http://wps.cfc.dnd.ca/papers/nssc1/romses2.html*.

Rostek, M.A. "Defence Management in the 1990s." Unpublished paper, June 2000.

Sapolsky, Harvey M. "Interservice Competition: The Solution, Not the Problem." *Joint Force Quarterly* (Spring 1997), 50-3.

Semianiw, W. "Western Operational Theory: Breaking the Industrial Paradigm." Paper prepared for AMSC 1, 1998. Copy in Information Resource Centre, Canadian Forces College, Toronto.

Sloan, Elinor C. "The United States and the Revolution in Military Affairs." Directorate of Strategic Analysis, DND, Ottawa, Project Report No. 9801, February 1998.

Snider, Don M. "An Uninformed Debate on Military Culture." *Orbis* 43, no. 1 (Winter 1999), 15-19.

Soeters, J. and R. Recht, "Culture and Discipline in Military Academies: An International Comparison." *Journal of Political and Military Sociology* 26, no. 2 (Winter 1998), 169-89.

Starry, Donn A. "A Perspective on American Military Thought." *Military Review* 69 (July 1989), 6-10.

Swain, Richard. "Filling the Void: The Operational Art and the US Army." In B.J.C. McKercher and Michael A. Hennessy, eds. *The Operational Art: Developments in the Theories of War*. Westport, CT: Praeger, 1996, 148-66.

Theriault, G.C.E. "Reflections on Canadian Defence Policy and its Underlying Structural Problems." *Canadian Defence Quarterly* 22, no. 6 (July 1993), 3-10.

Thomas, Robert H.. "Maritime Doctrine at the Operational Level of War." *http://wps.cfc.dnd.ca/amscreadings/bibmaritime.html*.

Thomas, Timothy L. "Kosovo and the Current Myth of Information Superiority." *Parameters* 30, no. 1 (Spring 2000), 13-29.

Ulmer, Walter F. "Military Leadership into the 21st Century: Another 'Bridge too Far?'" *Parameters* 28, no.1 (Spring 1998), 4-25.

128

Ulmer, Walter F., Jr., et al. *American Military Culture in the Twenty-First Century*. Washington, DC: CSIS Press, 2000.
Vallance, Andrew G.B. *The Air Weapon: Doctrines of Air Power Strategy and Operational Art*. London: Macmillan, 1996.

van Creveld, Martin. *Command in War*. Cambridge, MA: Harvard University Press, 1985.

van Riper, Paul K. and Robert H. Scales, Jr. "Preparing for War in the 21st Century." *Parameters* 27 (Autumn 1997), 4–14.

Weadon, Bryn M. "Canada's Joint Sustainment Co-ordination Capabilities." Paper written for AMSC 3, (Oct 2000). Will be available electronically on CFC web site shortly.

Young, Thomas-Durell, ed. *Command in NATO After the Cold War: Alliance, National, and Multinational Considerations*. Carlisle Barracks, PA: Strategic Studies Institute, US Army War College, 1997.
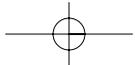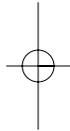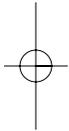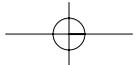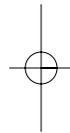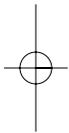
inside
back cover

back cover